

## **CURRICULUM VITAE**

Name: Athar Hussain

Date of Birth: 20th September 1968

*HEC Approved Supervisor in Physical Sciences*

*COMSATS Science Ambassador in the field of Climate Change since February 2015*

Current Affiliation: Professor and Chairman, Department of Meteorology,

Head, Centre for Climate Research and Development

COMSATS University Islamabad

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Current Research Interest: Climate Change Diagnostics and Attribution

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Google Scholar Profile: [scholar.google.com/citations?hl=en&user=Y-j5ZVkAAAAJ](https://scholar.google.com/citations?hl=en&user=Y-j5ZVkAAAAJ)

Cumulative Impact Factor: 112.00+

### Academic Background

M.Sc. (Physics) 1989 Quaid-i-Azam University Islamabad, Pakistan

M.Phil. (Physics) 1991 Quaid-i-Azam University Islamabad, Pakistan

DICTP (High Energy Physics) 1992-93 The Abdus Salam International Centre for Theoretical Physics Trieste (ICTP), Italy

PhD (Astro Particle Physics) 1996 Quaid-i-Azam University Islamabad, Pakistan

PhD (Atmospheric Science) 2008 University of Missouri, Columbia, MO, USA (GPA 4.0 out of 4.0)

### Post-Doctoral Fellow

August 2008 – July 2009 in Atmospheric Science at University of Missouri, Columbia, MO, USA

November 1996 - September 1997 Quaid-i-Azam University, Islamabad, Pakistan

October 1997 - March 1999 University of Santiago de Compostela, Santiago de Compostela, Spain

April 1999 - October 2000 Tokyo Metropolitan University, Tokyo, Japan

### Visiting Assistant Professor

November 2000 – July 2005 Physics Division, National Center for Theoretical Sciences (NCTS), Hsinchu, Taiwan

### Assistant Professor

November 2009 - July 2013 Center of Excellence for Climate Change Research and Department of Meteorology, King Abdulaziz University, Jeddah, Saudi Arabia

### Associate Professor

August 2013- December 2013 Department of Meteorology, COMSATS Institute of Information Technology, Islamabad, Pakistan

### Teaching Experience in Meteorology, Physics and Math

*At COMSATS University Islamabad, Pakistan (Fall 2013 – To date)*

#### MS Meteorology Courses

1. MET617 Numerical Methods during Fall 2013
2. MET624 Climatology during Fall 2016
3. MET672 Air-Sea Interaction during Fall 2017

#### PhD Meteorology Courses

1. MET713 Science of Climate Change during Fall 2013
2. MET711 Advanced Dynamical Meteorology during Spring 2014
3. MET723 Statistical Data Analysis during Spring 2014
4. MET721 Spectroscopic Theory during Fall 2014
5. MET716 Monsoon Meteorology during Spring 2015
6. MET723 Statistical Data analysis during Spring 2015

7. MET721 Spectroscopic Theory during Fall 2015
8. MET735 Advanced Geo-Statistical Analysis during Spring 2016
9. MET734 Atmospheric Radiation during Fall 2016
10. MET716 Monsoon Meteorology during Spring 2017
11. MET740 Advanced Statistical Analysis in Meteorology Spring 2018

*At King Abdul Aziz University, Jeddah, Saudi Arabia (4 years: 2009 – 2013)*

#### Graduate courses

1. MET 689 Statistical Meteorology during Fall 2009
2. MET 779A Special Topics (Statistical Downscaling) during Spring 2010
3. MET 772 Meteorological Data Processing during Spring 2010
4. MET 689 Statistical Meteorology during Spring 2010
5. MET 621 Statistical Meteorology during Fall 2010

#### Under-Graduate courses

1. MET 465 Statistical Meteorology during Spring 2011

*At University of Missouri, Columbia, MO, USA (3 years: 2006-2009)*

#### Undergraduate courses:

1. Substitute for ATMS 4001 (Space Weather) during Winter 2006
2. TA for ATMS 1110 (Introduction to Atmospheric Science) during Fall 2006
3. TA for ATMS 1050 (Introductory Meteorology) during Winter 2007
4. Substitute for ATMS 3600 (Climates of the World) during Winter 2007
5. Instructor for MATH 1100 (College Algebra for Calculus Bound Students) during Fall 2007
6. TA for ATMS 1050 (Introductory Meteorology) during Fall 2007
7. TA for ATMS 1050 (Introductory Meteorology) during Winter/Spring 2008
8. Recitation Instructor for PHYSICS 1210 (College Physics-I) during Winter/Spring 2008

9. Recitation Instructor for PHYSICS 2750 (University Physics-I) during Winter/Spring 2008

10. Private tutor for MATH 1500 (Analytic Geometry and Calculus-I) during Winter/Spring 2008

11. TA for ATMS 1050 (Introductory Meteorology) during Fall 2008

12. TA for ATMS 1050 (Introductory Meteorology) during Winter/Spring 2009

*At Moberly Area Community College, Columbia Campus, MO, USA (1 year: 2008-2009)*

Adjunct Instructor of Physical Science, for:

1. PHY 110 (Survey of Modern Physics) during Fall 2008 semester

2. PHY 262 (General Astronomy) during Fall 2008 semester

3. PHY 264 (Atmospheric Science) during Fall 2008 semester

4. PHY 110 (Survey of Modern Physics) during Spring 2009 semester

5. PHY 262 (General Astronomy) during Spring 2009 semester

6. PHY 264 (Atmospheric Science) during Spring 2009 semester

7. PHY 120 (Foundations of Chemistry with Lab.) during Summer 2009 semester

8. PHY 262 (General Astronomy) during Summer 2009 semester

9. PHY 264 (Atmospheric Science) during Summer 2009 semester

10. PHY 110 (Survey of Modern Physics) during Fall 2009 semester

11. PHY 262 (General Astronomy) during Fall 2009 semester

12. PHY 264 (Atmospheric Science) during Fall 2009 semester

*During PhD/Post Doc studies in Islamabad, Pakistan (2 years: 1995-1997)*

Taught to M.Sc. (Physics) students courses on

1. Special Relativity (A. P. French, Introduction to Special Relativity)

2. Quantum Mechanics (R. Liboff, Introductory Quantum Mechanics)

3. Particle Physics (mainly from D. Perkins, Introduction to High Energy Physics)

*Taught partially to M.Phil. (Physics) [a post M.Sc. two year program] students course on*

1. Quantum Field Theory (J. D. Bjorken and S. Drell, Relativistic Quantum Fields).

Service work at Department of Meteorology, CIIT, Islamabad, Pakistan (since Fall 2013)

1. Convener, Departmental Advisory Committee (DAC)
2. Convener, Departmental Tenure Review Committee (DTRC)
3. Convener, Board of Studies for Department of Meteorology
4. Convener, Departmental Course Development and Coordination Committee
5. Convener, Departmental Technical Evaluation Committee
6. Convener, Departmental Inquiry Committee
7. Convener, Departmental Evaluation Committee for the Post of Lecturer (Spring 2018)
8. Convener, Campus Inquiry Committee Related to a Research Paper
9. Convener, Departmental/Guest Seminar Committee (Spring 2014-Fall 2015)
10. Convener, Departmental Graduate Admission Interviews Committee (Fall 2014-Spring 2015)
11. Member, Supervisory Committee of several Doctoral Students
12. Member, Department Academic Review Committee (DARC)
13. Member, Board of Faculty of Science
14. Member, Departmental Research Attachment Committee
15. Member, Academic Council of CIIT
16. Member, Selection Board of CIIT
17. Member, Adhoc Selection Committee (ASC) for 2016-17 of CIIT
18. Incharge, Conduct of Exam During Terminal Examinations (Fall 2013, Spring 2015, Spring 2017)

Awards

Recipient of Research Productivity Award 2014 and 2015 by CIIT, Islamabad

Nominations

Nominated for award of Pakistan Academy of Sciences gold medal 2014 in Earth Sciences and Physics

Service work at Department of Meteorology, King Abdul Aziz University, Jeddah, Saudi Arabia (Fall 2009 - Spring 2013)

1. Member, PhD Program Committee, Department of Meteorology

2. Member, Accreditation Committee, Department of Meteorology
3. Member, Accreditation Committee, Faculty of Meteorology, Environment, and Arid Land Agriculture
4. Member, review and Independent Opinion Committee for Accreditation, Faculty of Meteorology, Environment, and Arid Land Agriculture
5. Member, Department Board Committee

### Research Interests

I am interested in the statistical and dynamic downscaling approaches, with an intention of using these approaches for regional climate adaptation and mitigation studies. To achieve this objective, I have collaborated to perform the validation and calibration studies of the IPCC AR4 and IPCC AR5 based AOGCMs to identify the suitable predictor variables for Arabian Peninsula and South Asia, including Pakistan, to be used in the statistical downscaling.

I have also performed a collaborative study of the impacts of mid-latitude blocking anticyclones for the weather of Pakistan. It was pointed out the anticyclones lead to a shift in the area averaged rainfall in the northern Pakistan during the DJF period by about 1-2 mm/day.

During my PhD and Postdoctoral studies at University of Missouri, Columbia, MO, USA, I have performed the scale and stability analysis of the mid-latitude atmospheric blocking events both in the northern as well as the southern hemisphere using the NCEP/NCAR re-analysis data.

### Supervision of MS and PhD Theses

#### MS Theses

1. Supervised (with Guey-Lin Lin) MS thesis of graduate student Mr. Y. L. Sming Tsai at NCTS (Aug 2003- July 2004), Taiwan. Thesis topic: *Solar Neutrino Puzzle*.
2. Supervised MS thesis of graduate student Ms. Ayesha Ahmad at CIIT, Islamabad (Sep 2013- Jun 2014). Thesis topic: *Investigating the Interannual Variability of Winter Rainfall in Pakistan and its Association with Western Disturbances*.

3. Supervised MS thesis of graduate student Mr. Asmat Ullah at CIIT, Islamabad (Sep 2013- Jun 2014). Thesis topic: *An AOGCM Based Diagnostic Study of Climate Change and its Variability in Pakistan.*
4. Supervised MS thesis of graduate student Mr. Waseem Ali at CIIT, Islamabad (Sep 2013- Jun 2015). Thesis topic: *Analyzing Temporal Change in Urban/Suburban Growth and its Influence on Changing Climate Using Landsat Imagery: A Case Study of Rawalpindi City, Punjab, Pakistan.*
5. Supervised MS thesis of graduate student Mr. Burhan Ahmed at CIIT, Islamabad (Sep 2014- Dec 2015). Thesis topic: *An Analysis of Climate Change in Pakistan.*

#### PhD Theses

1. Supervised (with Guey-Lin Lin) PhD dissertation of graduate student Mr. Jie-Jun Tseng at NCTS (Nov 2000- Jun 2002), Taiwan. Dissertation topic: *Production and propagation of Galactic and Atmospheric neutrinos.*
  2. Supervised (with Guey-Lin Lin) PhD dissertation of graduate student Mr. Fei-Fen Lee at NCTS (Sep 2003- July 2005), Taiwan. Dissertation topic: *Topics in Tau Neutrino Astronomy.*
  3. Supervised PhD thesis of graduate student Mr. Muhammad Farooq Iqbal at CUI (Aug 2013- Aug 2018). Thesis topic: *Spatiotemporal Assessment of Precipitation for Hydrological Applications over Diverse Topography of Pakistan.*
- Currently supervising 1 MS thesis on various aspects of short term climate variability.
  - Currently supervising 4 PhD theses on various aspects of *Climate Change Diagnosis and Attribution in Pakistan* at COMSATS University Islamabad.

#### Referee

- Physics Letters B
- Atmospheric Research
- Journal of Ecology and the Natural Environment
- International Journal of Climatology
- Journal of King Abdulaziz University: Meteorology, Environment and Arid Land Agriculture Sciences
- Islamabad Policy Research Institute (IPRI) based journal
- COMSATS based journal Science Vision

#### Knowledge/Experience of Computer Languages/Software

MATLAB, GrADS, R, Fortran, Mathematica, Latex

## Research and Academic Networks Memberships

1. ICTP based AGCM-Net (Atmospheric circulation and predictability studies)
2. UK based CliMathNet
3. Elsevier's online community-based Innovation Explorers (2014-2015)

## Publications

### Meteorology

42. Observed, stochastically simulated and projected precipitation variability in Pakistan  
A. Nabeel and H. Athar (submitted)

41. Recent decadal variability of daily temperature in Hindukush, Karakoram and Himalaya region in northern Pakistan

A. Waqas and H. Athar (submitted)

40. Observed diurnal temperature range variations and its association with observed cloud cover in northern Pakistan

A. Waqas and H. Athar  
International Journal of Climatology, 38, 3323-3336 (2018)

39. An AOGCM based assessment of interseasonal variability in Pakistan

U. Asmat, H. Athar, A. Nabeel and M. Latif

Climate Dynamics, 50, 349-373 (2018)

38. Validation of satellite based precipitation over diverse topography of Pakistan

M. F. Iqbal and H. Athar

Atmospheric Research 201, 247-260 (2018)



37. Classification of precipitation regimes in Pakistan using wet and dry spells

A. Nabeel and H. Athar

International Journal of Climatology 38, 2462-2477 (2018)

36. Assessment of simulated and projected climate change in Pakistan using IPCC AR4 based AOGCMs

F. Saeed and H. Athar

Theoretical and Applied Climatology, DOI: 10.1007/s00704-017-2320-5 (2017)

35. Variability, trends, and teleconnections of observed precipitation over Pakistan

M. F. Iqbal and H. Athar

Theoretical and Applied Climatology, DOI: 10.1007/s00704-017-2296-1 (2017)

34. Evaluation of past and projected climate change in Pakistan region based on GCM20 and RegCM4.3 outputs

A. Burhan and H. Athar

Pakistan Journal of Meteorology 13, 63-86 (2017)

33. Run-based multi-model interannual variability assessment of precipitation and temperature over Pakistan using two IPCC AR4 based AOGCMs

U. Asmat and H. Athar

Theoretical and Applied Climatology 127, 1-16 (2017)

32. Seasonal characteristics of the large-scale moisture flux transport over the Arabian Peninsula

H. Athar and K. Ammar

Theoretical and Applied Climatology 124(3), 565-587 (2016)

31. Assessment of global Carbon Dioxide emission and warming with a focus on Pakistan

H. Athar

Science Vision 21, 63-71 (2015)

30. Teleconnections and variability in observed rainfall over Saudi Arabia during 1978-2010

H. Athar

Atmospheric Science Letters 16, 373-379 (2015)

29. Surface temperature forecast skill comparison for the west coast of Saudi Arabia

H. Athar and A. Sara

Atmósfera 27, 287-303 (2014)

28. Trends in observed extreme climate indices in Saudi Arabia during 1979-2008

International Journal of Climatology 34, 1561-1574 (2014)

H. Athar

27. Weather forecast skill comparison at a location in the Midwest United States

Meteorological Applications 21, 930-939 (2014)

H. Athar and A. Sara

26. Interannual variability of rainfall over the Arabian Peninsula using the IPCC AR4 global climate models

International Journal of Climatology 33, 2328-2340 (2013)

M. Almazroui, M. A. Abid, H. Athar, M. N. Islam, and M. A. Ehsan

25. Seasonal variability of the observed and the projected daily temperatures in northern Saudi Arabia

Climatic Change 119, 333-344 (2013)

H. Athar

24. Effect of mid-latitude blocking anticyclones on the weather of the Arabian Peninsula

International Journal of Climatology 33, 585-598 (2013)

H. Athar, M. Almazroui, M. N. Islam, M. A. Abid, and M. A. Ehsan

23. Decadal variability of the observed daily temperature in Saudi Arabia during 1979-2008

Atmospheric Science Letters 13, 244-249 (2012)

H. Athar

22. A dynamic analysis of the role of the planetary and synoptic scale in the summer of 2010 blocking episodes over the European part of Russia

Advances in Meteorology 2012, Article ID 584257 (2012)

A. Lupo, I. Mokhov, M. Akperov, A. Cherokulsky, and H. Athar

21. Recent climate change in the Arabian Peninsula: Seasonal rainfall and temperature climatology of Saudi Arabia for 1979–2009

Atmospheric Research 111, 29-45 (2012)

M. Almazroui, M. N. Islam, H. Athar, P. D. Jones, and M. A. Rahman

20. Recent climate change in the Arabian Peninsula: annual rainfall and temperature analysis of Saudi Arabia for 1978–2009

International Journal of Climatology 32, 953-966 (2012)

M. Almazroui, M. N. Islam, H. Athar, P. D. Jones, and M. A. Rahman

19. A comparative study to quantify the sensitive dependence in numerical models for a developing low in the Southern Plains

Transactions of the Missouri Academy of Science 44, 1-12 (2010)

A. Schnetzler, J. Glisan, H. Athar, P. Market, and A. Lupo

18. Scale analysis of blocking events from 2002-2004: A case study of an unusually persistent blocking event leading to heat wave in the Gulf of Alaska during August 2004

Advances in Meteorology 2010, Article ID 610263 (2010)

H. Athar and A. Lupo

### Neutrino Astroparticle Physics

17. The Intrinsic and oscillated astrophysical neutrino flavor ratios

Modern Physics Letters A 21, 1049-1065 (2006) [e-Print: hep-ph/0505017]

H. Athar, C. S. Kim and Jake Lee

16. Tau Neutrino Astronomy in GeV Energies

Physical Review D 71, *id.* 103008 (2005) [e-Print: hep-ph/0407183]

H. Athar, Fei-Fan Lee and Guey-Lin Lin

15. GeV to TeV astrophysical tau neutrinos

Physics Letters B 598, 1-7 (2004) [e-Print: hep-ph/0407182]

H. Athar and C. S. Kim

14. Mixed high energy neutrinos from cosmos

Chinese Journal of Physics 42, 1-20 (2004) [e-Print: hep-ph/0308188]

H. Athar

13. Energy spectrum of tau leptons induced by the high energy Earth-skimming neutrinos

Physical Review D 68, *id.* 063003 (2003) [e-Print: astro-ph/0305507]

Jie-Jun Tseng, Tsung-Wen Yeh, H. Athar, M. A. Huang, Fei-Fain Lee and Guey-Lin Lin

12. Comparison of high-energy galactic and atmospheric tau neutrino flux

Astroparticle Physics 18, 581-592 (2003) [e-Print: hep-ph/0112222]

H. Athar, Kingman Cheung, Guey-Lin Lin, and Jie-Jun Tseng

11. Implications of  $\bar{\nu}_e e \rightarrow W^- \gamma$  for high-energy  $\bar{\nu}_e$  observation

Astroparticle Physics 19, 569-574 (2003) [e-Print: hep-ph/0108204]

H. Athar and Guey-Lin Lin

10. Muon pair production by electron-photon scatterings

Physical Review D 64, *id.* R071302 (2001) [e-Print: hep-ph/0104185]

H. Athar, Guey-Lin Lin and Jie-Jun Tseng

9. Prospects for observations of high-energy cosmic tau neutrinos

Physical Review D 62, *id.* 093010 (2000) [e-Print: hep-ph/0006123]

H. Athar, G. Parente and E. Zas

8. Effects of neutrino mixing on high-energy cosmic neutrino flux

Physical Review D 62, *id.* 103007 (2000) [e-Print: hep-ph/0005104]

H. Athar, M. Jezabek and O. Yasuda

7. Neutrino spin-flip in Active Galactic Nuclei

Chinese Journal of Physics 40, 251-264 (2002) [e-Print: hep-ph/9806408]

M. Anwar Mughal and H. Athar

6. Neutrino conversions in cosmological gamma-ray burst fireballs

Astroparticle Physics 14, 217-225 (2000) [e-Print: hep-ph/0004191]

H. Athar

5. Matter effects on neutrino oscillations in gravitational and magnetic fields

Physical Review D 61, *id.* 103001 (2000) [e-Print: hep-ph/0001069]

H. Athar and Jose F. Nieves

4. Effects of a primordial magnetic field twist on neutrino conversions in the early Universe

Physics Letters B 366, 229-234 (1996)

H. Athar

3. Neutrino spin-flip effects in collapsing stars

Physical Review D 51, 6647-6662 (1995) [e-Print: hep-ph/9501283]

H. Athar, J. T. Peltoniemi and A. Yu. Smirnov

2. Signatures of neutrino conversions to sterile states in collapsing stars

Physical Review D 51, 5785-5789 (1995)

H. Athar and J. T. Peltoniemi

### Low Temperature Physics

1. Flux Pinning in Intergrain Junctions-A Magnetization Rotation Study

Solid State Communications 79, 601-605 (1991)

A. Mumtaz, H. Athar, S. K. Hasanain and Jamil A. Khan

### Conference Talks and Conference Papers in Meteorology

1. Talk entitled 'Atmospheric Blocking and Lyapunov Exponents' given in 19th Conference on Climate Variability and Change (19th CVC) held at 87th AMS Annual Meeting, 14-18 January, 2007, San Antonio, TX, USA. Appeared in its proceedings.
2. Talk entitled 'A Calculation of Lyapunov Exponents for Atmospheric Blocking' given in 43rd Annual meeting of Missouri Academy of Sciences, 20-21 April, 2007, held in Missouri Western State University, San Joseph, MO, USA.
3. Talk entitled 'A comparative study to quantify the chaotic behavior in numerical models' given by A. Schnetzler, G. Amaenta and H. Athar et al., in 43rd Annual meeting of Missouri Academy of Sciences, 20-21 April, 2007, held in Missouri Western State University, San Joseph, MO, USA.
4. Talk entitled 'A Calculation of Lyapunov Exponents for Atmospheric Blocking' given in 16th Conference on Atmospheric and Oceanic Fluid Dynamics (16th Fluid), 25-29 June, 2007, Santa Fe, NM, USA. Appeared in its proceedings.
5. Group project based talk entitled 'Relationship of Arabian Peninsula Rainfall with SST' given at Targeted Training Activity (TTA) on 'Statistical Methods in Seasonal predictions', 2-13 August, 2010, The Abdus Salam ICTP, Trieste, Italy.
6. Group project based talk entitled 'Nile Basin Precipitation Response to the Tropical Variability' given at School and Conference on 'The General Circulation of the Atmosphere and the Oceans: a Modern Perspective', 11-15 July, 2011, The Abdus Salam ICTP, Trieste, Italy.
7. Talk entitled 'Atmospheric Modelling Systems for Southeast Region' given by Dr. Vanisa at Siam Physics Congress 2018 (SPC2018), held at Topland Hotel, Phitsanulok, Thailand, during 21 May to 23 May, 2018 (to appear in its proceedings published by IOP Science).

### Invited Talks in Meteorology

1. Talk entitled 'A Dynamic Perspective of Asian Monsoon' given at International Conference on the Asian Monsoon and Climate Change', 20-21 January, 2014, Islamabad.
2. Talk entitled 'Mid-Latitude Anticyclones and Climate of Pakistan', given at 14th Regional Conference on Mathematical Physics, 9-14 November, 2015, Quaid-i-Azam University, Islamabad. Appeared in its proceedings, pp. 293-302 (published by World Scientific).



3. Talk entitled ‘Trans-boundary hydro-ecological and spatio-temporal characterization of large water reservoirs’ with Ibrar-ul-Hassan Akhtar, given at United Nations/Pakistan/PSIPW 4th International Conference on Space Technology for Water Management, Hosted by SUPARCO on behalf of the Government of Pakistan, Islamabad Serena Hotel, Islamabad, 26 February - 2 March 2018.

4. Talk entitled ‘Changing Climate of Pakistan’ given at 10th International Scientific School, 12-16 March, 2018, held at National Centre for Physics (NCP), Islamabad, co-organized by NCP and The Abdus Salam International Centre for Theoretical Physics Trieste (ICTP), Italy.

#### Conference Posters in Meteorology

1. Poster entitled ‘A comparative study to quantify the chaotic behavior in numerical models’ presented by A. Schnetzler, P. Market and H. Athar et al., in NWA’s 32nd Annual Meeting, 13-18 October, 2007, held in Circus Circus-Reno Hotel and Convention Center, Reno, NV, USA.

2. Poster entitled ‘Stability analysis of barotropic flow in an extreme blocking event leading to heat wave in gulf of Alaska during August 2004’ by H. Athar and A. R. Lupo presented in 20th Conference on Climate Variability and Change (20<sup>th</sup> CVC) held at 88th AMS Annual Meeting, 20-24 January, 2008, New Orleans, LA, USA. Appeared in its proceedings.

3. The following six posters were presented in International Conference on the Asian Monsoon and Climate Change, 20-21 January, 2014, Islamabad:

i) Synthetic rainfall Generation During Winter and Summer Monsoon in Pakistan, by A. Nabeel and H. Athar (**Winner of Third Student Poster Position**)

ii) Simulation and Projection of Summer Monsoon Climate in Pakistan using MAGICC/SCENGEN, by G. Qaiser , S. Haider, S. Zia, I. Ahmad, I. Azeem, and H. Athar

iii) Study of Summer and Winter Monsoon Variability in Pakistan using an AOGCM, by U. Asmat, and H. Athar,

iv) Statistical Analysis of Winter Monsoon in Northern Pakistan, by A. Ayesha, and H. Athar,

v) A Diagnostic study of Monsoon Rainfall in Pakistan, by B. Ahmad, A. Sajjad, A. Bukhtar, A. Shafiq, and H. Athar

- vi) Multimodel Summer Monsoon Variability in Pakistan using MAGICC/SCENGEN during 1981-2010, by S. Haider, I. A. Siddiqui, G. Qaiser, S. Zia, I. Azeem, and H. Athar.
4. Poster entitled ‘Recent Variability of the Observed Diurnal Temperature Range in the Karakoram and its Surrounding Mountains of Northern Pakistan’ by A. Waqas, H. Athar, and M. I. Shahzad, in AGU Fall Meeting, 12-16 December, 2016, San Francisco, USA.
  5. Presented following five posters at the Science Policy Conference on Climate Change (SP3C) 2017 being held at Marriott Hotel Islamabad, organized by GCISC:
    - i) Spatiotemporal Characteristics of Precipitation in Changing Climate of Pakistan  
Muhammad Farooq Iqbal, H. Athar
    - ii) Evaluation of TRMM Satellite based Precipitation over Pakistan  
Muhammad Farooq Iqbal, H. Athar
    - iii) Climate Classification in Pakistan  
A. Nabeel, H. Athar
    - iv) Interseasonal variability of Precipitation in Pakistan Using IPCC AR5 Based AOGCMs  
U. Asmat, H. Athar, A. Nabeel, M. Latif
    - v) Assessment of Climate Change in Pakistan using IPCC AR4 based AOGCMs  
F. Saeed, H. Athar
  6. Poster entitled ‘Recent Variations in Observed Daily Temperatures and its Impact on the River Discharge of the Upper Indus Basin’ by A. Waqas and H. Athar, in AGU Fall Meeting, 11-15 December, 2017, New Orleans USA.

#### Conference Organization in Meteorology

1. Organizing committee member of *International Conference on the Asian Monsoon and Climate Change*, 20-21 January, 2014, Islamabad.
2. One of the Principal Organizer, International GIS Day 2016, held at CIIT, Islamabad, on 01 December, 2016.

### Session Chairs in Meetings

1. Chaired two sessions entitled 1)- future climate projections under IPCC scenarios & 2)- the response of cryosphere to warming climate, at the Science Policy Conference on Climate Change (SP3C) 2017 being held at Marriott Hotel Islamabad, organized by GCISC.
2. Chaired a Plenary Session '4 – Capacity Building and Cooperation Initiatives' in United Nations/Pakistan/PSIPW 4th International Conference on Space Technology for Water Management, Hosted by SUPARCO on behalf of the Government of Pakistan, Islamabad Serena Hotel, Islamabad, 26 February - 2 March 2018.
3. Presented remarks in opening ceremony and chaired closing ceremony in International Workshop on Sustainable Food Systems Under Climate Change in South Asia, organized by CCRD, CUI, Islamabad, during 26-28 June, 2018, at Islamabad Serena Hotel. Also participated in one of the thematic technical sessions in the Workshop.

### Public Service - Participation in TV/Media Interaction

Participated in a live morning transmission program on *Climate Change and Global Warming* by PTV World on 18th October 2016.

### Participation in Conferences

1. One-day meeting entitled 'Advancing Renewables in the Midwest', University of Missouri, Columbia, MO, USA, 28 March, 2007.
2. Fourth Annual Meeting entitled 'Advancing Renewables in the Midwest', University of Missouri, Columbia, MO, USA, 3 June, 2009.

### Participation in Summer Schools

1. Second Heliophysics Summer School entitled "Space Storms and Radiation: Causes and Effect", UCAR, Boulder, CO, USA, 23-30 July, 2008.

### Hands-on Experience

1. Quality control and data analysis for wind data from tall wind towers in Missouri.

2. Attended a one-day training course in ‘Basics of Data Analysis in SPSS’ at University of Missouri, Columbia, MO, USA, on 26th Sept. 2009.

#### Participation in Faculty Professional Development Skill Programs

1. One Day Professional Faculty Development Workshop with Focus on *Assessment*, held at Moberly Area Community College, Moberly, MO, USA, 17 October, 2008.

#### Membership of Professional Bodies/Scientific Organizations

1. Life Member of the Pakistan Institute of Physics (PIP), Lahore (Pakistan).
2. Life Member of the Pakistan Physical Society (PPS), Islamabad (Pakistan).
3. Full Member of the American Geophysical Union (AGU), 2007-2014, Washington, DC (USA).
4. Full Member of the American Meteorological Society (AMS), 2006-2013, Boston, MA (USA).
5. Associate Member of the Sigma Xi, The Scientific Research Society (2007-2013), NC (USA).

#### Projects

1. PI, pilot commercial project ‘Geospatial Monitoring of Maize Crop in Okara District’, funded by ORIC at CIIT, Islamabad, during March 2017 to December 2017. Funding amount: 400000.00 Rs.

#### Some of the seminars given in universities/institutes

##### 2015

Pakistan Academy of Science, Islamabad

##### 2014

Department of Meteorology, COMSATS Institute of Information Technology, Islamabad

##### 2010

Department of Meteorology, King Abdulaziz University, Jeddah, Saudi Arabia

2007

Soil, Environmental and Atmospheric Sciences Department, University of Missouri-Columbia, USA

2006

Soil, Environmental and Atmospheric Sciences Department, University of Missouri-Columbia, USA

Math Department, University of Missouri-Columbia, USA

Department of Physics and Astronomy, University of Missouri-Columbia, USA

2005

Institute of Physics, National Chiao Tung University, Hsinchu, Taiwan.

Department of Physics, National Taiwan University (NTU), Taipei, Taiwan.

Math Department, University of Missouri-Columbia, USA

2004

Institute of Physics, Academia Sinica, Taipei, Taiwan.

Institute of Physics and Applied Physics, Yonsei University, Seoul, Korea.

Department of Physics, National Cheng Kung University (NCKU), Tainan, Taiwan.

Department of Physics, National Central University (NCU), Jungli, Taiwan.

2003

Department of Physics, Quaid-i-Azam University, Islamabad, Pakistan.

Department of Physics, National Cheng Kung University (NCKU), Tainan, Taiwan.

2002

Department of Physics, National Tsing Hua University (NTHU), Hsinchu, Taiwan.

Department of Physics, The Chinese University of Hong Kong (CUHK), Hong Kong, P. R. China.

2001

Institute of Physics, Academia Sinica, Taipei, Taiwan.

Department of Physics, National Cheng Kung University (NCKU), Tainan, Taiwan.

Institute of Physics, National Chiao Tung University (NCTU), Hsinchu, Taiwan.

Department of Physics, National Taiwan University (NTU), Taipei, Taiwan.

Institute for Theoretical Physics, University of Vienna, Vienna, Austria.

2000

Koh Enerhughi Kenkyusho (KEK), Tsukuba-Shi, Ibaraki-Ken, Japan.

Yukawa Institute for Theoretical Physics (YITP), Kyoto, Japan.

Department of Physics, Hiroshima University, Hiroshima, Japan.

Aspen Center for Physics, Aspen, Colorado, USA.

National Center for Theoretical Sciences (NCTS), Hsinchu, Taiwan.

1999

Department of Physics, Tokyo Metropolitan University, Tokyo, Japan.

Institute for Theoretical Physics, Kanazawa University, Kanazawa, Japan.

Fermi National Accelerator Laboratory (FNAL), Batavia, Illinois, USA.

Institute for Elementary Particle Physics Research, Department of Physics, University of Wisconsin, Madison, USA.

Laboratoire d'Annecy-le-Vieux de Physique des Particules (LAPP), Annecy-le-Vieux, France.

Kamioka Observatory, ICRR, Univ. of Tokyo, Higashi-Mozumi, Kamioka, Japan.

1998

Deutsches Elektronen-Synchrotron Lab (DESY), Hamburg, Germany.

Departamento de Fisica de Particulas, Universidade de Santiago de Compostela, Santiago de Compostela, Espana.

Centro de Fisica das Interaccocs Fundamentais (CFIF), Instituto Superior Tecnico of Univ. Tecnica de Lisboa (IST), Lisboa, Portugal.

1997

Department of Physics, McGill University, Montreal, Canada.

1996

European Laboratory for Particle Physics (CERN), Geneva, Switzerland.

1995

The Abdus Salam International Centre for Theoretical Physics, Trieste (ICTP), Italy.

1994

Department of Physics, Quaid-i-Azam University, Islamabad, Pakistan.

Short-term visitor

1. European Laboratory for Particle Physics (CERN), Geneva, Switzerland.
2. Deutsches Elektronen-Synchrotron Lab (DESY), Hamburg, Germany.
3. Fermi National Accelerator Laboratory (FNAL), Batavia, Illinois, USA.
4. Joint Institute for Nuclear Research (JINR), Dubna, Russia.
5. Laboratoire d'Annecy-le-Vieux de Physique des Particules (LAPP), Annecy-le-Vieux, France.
6. Korea Institute for Advanced Study (KIAS), Seoul, S. Korea.
7. Aspen Center for Physics, Aspen, Colorado, USA.
8. National Centre for Physics (NCP), Islamabad, Pakistan.

9. Yonsei University, Seoul, S. Korea.

#### Academic Distinctions

1. Stood Second in School in Matric/High School.
2. Stood First in College in B.Sc.
3. Invited to join Golden Key International Honour Society, Atlanta, GA, USA, in recognition of outstanding academic achievement for the academic year 2007-2008, issued by the Golden Key Chapter at University of Missouri-Columbia, Columbia, MO, USA.
4. By invitation, brief biographical sketch included in Marquis Who's Who, NJ, USA.
5. By invitation, brief biographical sketch included in dictionary of international biography by International Biographical Centre, Cambridge, England.

#### Academic Scholarships

- 1-President Talent scholarship for M.Sc. studies in Islamabad (Pakistan) during 1988-1990.
- 2-University Grants Commission (UGC) scholarship under the scheme 'Scholarships for higher studies in Science' for M.Phil. studies in Islamabad (Pakistan) during 1991-1992.
- 3-Switzerland based World Laboratory (WL) scholarships for Ph.D. and Post-doctoral studies in Islamabad (Pakistan) during 1992-1997.
- 4-Prestigious Japan Society for the Promotion of Science (JSPS) scholarship for Post-doctoral study in Tokyo (Japan) during 1999-2000.

#### Knowledge of Languages

English (fluent), Urdu (fluent), Italian (slight), Spanish (slight), Arabic (slight)

#### Experience in Physics

\* Previous Main interest was in phenomenological aspects of (Neutrino) Astro Particle Physics.



Dissertation: PhD Dissertation (unpublished) 1996

Dissertation Advisor: Prof. Kamaluddin Ahmed (late)

Title: NEUTRINO SPIN-FLIP EFFECTS IN COLLAPSING STARS AND IN THE EARLY UNIVERSE

Briefly, in this thesis, the conversions of neutrinos from collapsing cores of stars in matter and magnetic fields of stars are considered. Possible consequences of magnetic field twist effects for the observations of supernovae neutrino bursts are discussed. In the early Universe, the effects of uniform as well as non uniform primordial magnetic field twist on neutrino conversions are studied.

\* Collaboration member of the Salt Neutrino Detector (SND) Study Group at Tokyo Metropolitan University, Tokyo, Japan (1999-2001)

High-energy neutrinos interacting near or inside a detector produce (electromagnetic) showers through charged and/or neutral current deep inelastic scatterings over the free nucleons. This shower contains radio waves via Askaryan effect. In this collaboration, we are measuring the transmission properties of radio waves in different samples of (rock) salt to judge its suitability as a detection medium for high-energy neutrinos.

An update of the SND efforts is described in Proceedings of First NCTS Workshop on Astroparticle Physics, Kenting, Taiwan, 6-9 December, 2001, edited by H. Athar, Guey-Lin Lin and K.-W. Ng, published by World Scientific Publishing Co., Singapore.

\* Collaboration member of *NuTel group* based in Taipei, Taiwan (2001-2005). Status was reported in *Mod. Phys. Lett. A19, 1117 (2004)*.

High-energy neutrinos interacting near or inside a detector produce (electromagnetic) showers through charged and/or neutral current deep inelastic scatterings over the free nucleons. This shower contains radio waves via Askaryan effect. In this collaboration, we are measuring the transmission properties of radio waves in different samples of (rock) salt to judge its suitability as a detection medium for high-energy neutrinos.

#### Coordination/Organization

1. A coordinator in Neutrino Study Group at NCTS during 2000-2001, Hsinchu, Taiwan.
2. A coordinator for NCTS Subprogram on Astroparticle Physics during 2002-2003, Hsinchu, Taiwan.

3. Member, Organizing Committee, 2nd NCTS Workshop on Astroparticle Physics, 16-18 January, 2003, Taiwan.
4. Member, Scientific and International Organizing Committee, The 7th Constantine High Energy Physics School on Theoretical Physics-Cosmology, 3-7 April, 2004, held in LPMPs, Mentouri - Constantine University, Algeria.
5. A discussion leader in 2004 Summer Program on Particles and fields, held in National Tsing Hua University, Hsinchu, Taiwan, 12 July - 6 August, 2004.
6. Main coordinator of the National Subprogram in Neutrino Astroparticle Physics by NCTS, January – December 2005, Taiwan.

### Citations

Total number of citations, in Physics, according to Stanford Linear Accelerator Center Library USA (SLAC INSPIRE) is 701; one well-known paper with 50+ and one very well-known paper with 150+ citations (as of August 2018), having the h\_HEP index of 12.

### Editorial Work

Editor (with Guey-Lin Lin and K.-W. Ng), Proceedings of *First NCTS Workshop on Astroparticle Physics*, held in Kenting, Taiwan, December, 2001, published by World Scientific Co., Singapore, ISBN 981-238-103-1, October 2002, 192 pages.

### Proceedings Articles

1. Talk entitled 'Constraints on neutrino intrinsic properties from supernovae' given at 5th National Symposium on Frontiers in Physics, 26-28 Dec., 1995, held at Department of Physics, Quaid-i-Azam University, Islamabad, Pakistan (Published in its Proceedings, Eds. G. Murtaza and Tahir Farid, p. 206-213).
2. Talk entitled 'Neutrino spin-flip in active galactic nuclei' given in 6th National Symposium on Frontiers in Physics, 16-18 December, 1997, held in Department of Physics, Quaid-i-Azam University, Islamabad, Pakistan (Published in its Proceedings; Eds. K. Ahmed, M. Aslam Baig and S. Hussain; QAU press, p. 188-195).
3. Presented a seminar entitled 'Spin-flavor conversions of neutrinos in collapsing stars' in Second Meeting on "New Worlds in Astroparticle Physics" held in University of Algarve, Faro, Portugal, 3-5 September, 1998, [Published in its Proceedings, Eds. A. Mourao, M. Pimento and P. Sa; World Scientific, Singapore, p. 244-248 (hep-ph/9902222)].

4. Talk entitled 'Tau neutrinos from active galactic nuclei' given at Fifth International Workshop on Tau Lepton Physics (TAU 98), 14-17 Sep., 1998, Santander, Spain [Published in its Proceedings; Nucl. Phys. B (Proc. Suppl.) 76 (1999) 419-424; Eds. A. Pich and A. Ruiz, hep-ph/9811221].
  
5. Presented a contributed paper entitled 'High Energy Cosmic Tau Neutrinos' in Sixth International Workshop on Topics in Astroparticle Physics (TAUP 99), held at College de France, Paris, France, 6-10 September, 1999 [Published in its proceedings; Nucl. Phys. B (Proc. Suppl.) 87 (2000) 442-444; Eds. M. Froissart, J. Dumarchez and D. Vignaud, hep-ph/9912417].
  
6. Presented a contributed talk entitled 'Neutrino Conversions in Active Galactic Nuclei' in 9th Lomonosov Conference on Elementary Particle Physics, held at Faculty of Physics, Moscow State University, Moscow, Russia, 20-26 September, 1999 (appeared in its proceedings entitled 'Particle Physics at the start of the New Millennium', edited by A. Studenikin, published by World Scientific Publishing Co., Singapore, p. 147-152, hep-ph/0001128).
  
7. Talk entitled 'Cosmic Tau Neutrinos' given in Yukawa Institute for Theoretical Physics (YITP) workshop on 'Theoretical Problems related to Neutrino Oscillations', held in Kyoto, Japan, 28 February-01 March, 2000 [Published in its proceedings report Soryushiron Kenkyu (Kyoto) [Elementary Particle Physics Research] edited by M. Bando et al., 101 (2), May 2000, p. B33-B37, hep-ph/0004083].
  
8. Talk entitled 'Ultra-high energy cosmic neutrinos' given in the 8th Asia Pacific Physics Conference (APPC 2000), held in Academia Sinica, Taipei, Taiwan, 7-10 August, 2000 (appeared in its proceedings edited by Y-D. Yao et al., published by World Scientific Publishing Co., Singapore, p. 158-160, hep-ph/0008121).
  
9. Talk entitled 'Study of Salt Neutrino Detector' by M. Chiba, presented in 1st International Workshop on Radio Detection of High-Energy Particles (RADHEP 2000), Los Angeles, California, USA, 16-18 Nov 2000, published in AIP Conf. Proc. 579 (2001) 204-221,. Also in \*Los Angeles 2000, Radio detection of high energy particles\* 204-221 by T. Kamijo, M. Kawaki, H. Athar, M. Inuzuka, M. Ikeda, O. Yasuda.
  
10. Talk entitled 'The Implications of  $e^- \text{Anti-}\nu_e \rightarrow W\gamma$  for the detection of high-Energy Antiv $_e$ ' by Guey-Lin Lin presented at 5th RESCEU International Symposium on New Trends in Theoretical and Observations Cosmology, Tokyo, Japan, 13-16 Nov 2001. Published in \*Tokyo 2001, New trends in theoretical and observational cosmology\* 141-144, e-Print Archive: hep-ph/0201026, by H. Athar, Guey-Lin Lin.
  
11. Invited Talk entitled 'On non hadronic origin of high energy neutrinos' given in the First NCTS Workshop on Astroparticle Physics, held in Kenting, Taiwan, 6-9 December,

2001 (appeared in its proceedings edited by H. Athar, Guey-Lin Lin and K.-W. Ng, published by World Scientific Publishing Co., Singapore, pp. 127-135, hep-ph/0203265).

12. Talk entitled 'Measurement of Attenuation length in Rock salt and Limestone in Radio Wave for Ultra-high Energy Neutrino Detector' given by M. Chiba in 1st NCTS Workshop on Astroparticle Physics, Kenting, Taiwan, 6-9 Dec 2001. Published in \*Kenting 2001, Astroparticle physics\* 90-104, by M. Chiba, M. Kawaki, M. Inuzuka, T. Kamijo and H. Athar.

13. Talk entitled 'Galactic High-energy Cosmic-Ray Tau-Neutrino Flux' given by K. Cheung in 1st NCTS Workshop on Astroparticle Physics, Kenting, Taiwan, 6-9 Dec 2001. Published in \*Kenting 2001, Astroparticle physics\* 117-126 by H. Athar, K. Cheung, Guey-Lin Lin and Jie-Jun Tseng.

14. Talk entitled 'Comparison of High-energy Galactic and Atmospheric Tau Neutrino Flux' given by Jie-Jun Tseng in 2002 International Symposium on Cosmology and Particle Astrophysics (CosPA 2002), Taipei, Taiwan, 31 May - 2 Jun 2002. Published in \*Taipei 2002, Cosmology and particle astrophysics\* 181-189 by H. Athar, et al.,

15. Talk entitled 'High-energy astrophysical neutrinos' given in 8th Asian Pacific Regional Meeting of the International Astronomical Union, held in Tokyo, Japan, 2-5 July, 2002 ( appeared in its proceedings edited by S. Ikeuchi, J. Hearnshaw and T. Hanawa, published by Astronomical Society of the Pacific as ASP Conference series volume 289, San Francisco, 2003, ISBN: 1-58381-134-6, hep-ph/0209130).

16. Talk entitled 'High-energy astrophysical tau neutrinos: The expectations' given in XII International Symposium on Very High Energy Cosmic Ray Interactions (XII ISVHECRI), held in CERN, Geneva, Switzerland, 15-20 July, 2002 [appeared in its proceedings in Nucl. Phys. B (Proc. Suppl.) 122 (2003) 305-308 edited by B. Pattison et al., hep-ph/0210244].

17. Talk entitled 'The High-energy Galactic Tau Neutrino Flux and Its Atmospheric Background' given by G. L. Lin in International Europhysics Conference On High-Energy Physics (HEP 2003), 17-23 Jul 2003, Aachen, Germany. Published in Eur. Phys. J. C33 (2004) S959-S961, e-Print Archive: astro-ph/0311586 by H. Athar et al..

18. Talk entitled 'High Energy Tau Neutrinos: Production, Propagation and Prospects of Observations' given in 28th International Cosmic Ray Conference (ICRC 2003), held in Tsukuba, Japan, 31 July - 07 August, 2003 [appeared in its proceedings edited by T. Kajita et al., HE, pp. 1431-1434, hep-ph/0308270].

19. Talk entitled 'Tau Leptons from Earth Skimming Tau Neutrinos' given by Jie-Jin Tseng in International Workshop on Astroparticle and High-Energy Physics (AHEP-2003), Valencia, Spain, 14-18 Oct 2003. Published in \*Valencia 2003, Astroparticle and

high energy physics\* AHEP2003/040 by Jie-Jun Tseng, Tsung-Wen Yeh, H. Athar, M.A. Huang, Fei-Fain Lee and Guey-Lin Lin.

20. Invited Talk entitled 'PeV Cosmic Neutinos from the Mountains' given by P. Yeh in 2003 International Symposium on Cosmology and Particle Astrophysics (CosPA 2003), Taipei, Taiwan, 13-15 Nov 2003. Published in Mod. Phys. Lett. A19 (2004) 1117-1124, by P. Yeh, H. Athar et al., [NuTel Collaboration]; edited by W-Y. Pauchy Hwang, Guey-Lin Lin and J. -H. Protz Wu.

21. Poster entitled "On possibility of The Tau Neutrino Astronomy in GeV energies" presented in Neutrino 2004 by Fei-Fan Lee, held in Paris, France, 14-19 June, 2004. Published in Nucl. Phys. B (Proc. Suppl.) 143 (2005) 553, by H. Athar, F.-F. Lee and G. -L. Lin.; edited by J. Dumarchez, Th. Patzak, and F. Vannucci.

22. Invited Talk entitled 'Atmospheric and Galactic Neutrinos', given in 2003 International Symposium on Cosmology and Particle Astrophysics (CosPA 2003), held in National Taiwan University, Taiwan, 13-15 November, 2003 (appeared in its proceedings in Mod. Phys. Lett. A 19 (2004) 1171-1178, hep-ph/0401242).

23. Invited Talk entitled 'On the prospects of tau neutrino astronomy in GeV energies and beyond', given (by GLL) in the Moriond Conference: Very High Energy Phenomena in the Universe, La Thulie, Italy, 12-19 March, 2005 (appeared in its proceedings, hep-ph/0505248).

24. Lectures entitled 'Some aspects of neutrino astrophysics' given in the 6th Constantine High Energy Physics School on *Weak and Strong Interactions Phenomenology*, held in Physics Department, Mentouri University, Constantine, Algeria, 6-12 April, 2002 (summary of the lectures will appear in its proceedings edited by N. Mebarki and J. Mimouni, hep-ph/0212387).

#### Some other talks given in Conferences/Schools (not included in Proceedings Articles)

1. Talk entitled 'Neutrino spin-flip effects in Collapsing Stars' given in a Discussion Group of Summer School in High Energy Physics and Cosmology, 12 June - 28 July, 1995, held at ICTP, Trieste, Italy.

2. Talk entitled 'Neutrino spin-flip in collapsing stars' given at the Summer School on Physics with Neutrinos, 4-10 August, 1996, held at Zuoz (Engadin), Switzerland.

3. An informal seminar entitled 'High Energy Cosmic Neutrinos' given in Second Session of Summer Institute'99, held in Yamanashi (near Mount Fuji), Japan, 15-21 August, 1999.

4. Talk entitled 'High-energy cosmic neutrinos' given in Sendai Phenomenology Workshop (NEW DIRECTIONS TO UNIFIED THEORIES), held in Tohoku University, Sendai, Japan, 23-25 October, 2000.

5. Talk entitled 'High-energy cosmic neutrinos' given in USA-Taiwan Cooperative Workshop on Cosmology and Particle Astrophysics, held in I-Lan, Taiwan, 11-15 December, 2000.

6. Talk entitled 'High-energy cosmic neutrinos and CP violation' given in the 3rd Mini-Workshop on B Physics and CP violation, held in Wulai, Taipei, Taiwan, 16-17 December, 2000.

7. Talk entitled 'High-energy tau neutrinos from cosmos' given in 2001 annual meeting of The Physical Society of Republic of China (PSROC 2001), held in National Taiwan University, Taipei, Taiwan, 12-14 February, 2001.

#### Invited talks

1. Talk entitled 'High energy tau neutrinos' given in VHE Neutrino Telescope Workshop, held at National Taiwan University, Taipei, Taiwan, 21-23 March, 2002.

2. Talk entitled 'High energy neutrinos from cosmos: Present expectations', given in Second NCTS Workshop on Astroparticle Physics, held in Lung-Tan, Taiwan, 16-18 January, 2003.

3. Talk entitled 'GeV to TeV tau neutrinos', given in 2004 Summer Program on Particles and fields, held in National Tsing Hua University, Hsinchu, Taiwan, 12 July - 6 August, 2004.

#### Plenary talks and Lectures

1. Talks entitled 'Cosmic Rays (I) & (II)' given in the International Neutrino Workshop, held in Institute of Theoretical Physics, Chinese Academy of Sciences, Beijing, P. R. China, 8-13 June, 2001.

2. Lecture entitled 'High energy neutrinos from cosmos: present expectations', given in KIAS Winter School for Particle Physics: *Neutrinos*, held in Korea Institute for Advanced Study, Seoul, Korea, 24-28 February, 2003.

3. Lectures entitled 'Cosmic Neutrinos' given in the The 7th Constantine High Energy Physics School on *Theoretical Physics-Cosmology*, 3-7 April, 2004, held in LPMPS, Mentouri - Constantine University, Algeria.

4. A series of 3 lectures entitled 'Neutrino Astrophysics' given at the Institute of Physics and Applied Physics (IPAP), Yonsei University, 20 April -10 May , 2004, Seoul, Korea.

#### Participation in Poster Sessions

1. Participated in Poster Session of Fourth School on Non-Accelerator Particle Astrophysics, 17-28 July, 1995, held at ICTP, Trieste, Italy.

2. Participated in Poster Session of 5th Symposium on frontiers in Physics, 26-28 Dec., 1995, held at Department of Physics, Quaid-i-Azam University, Islamabad, Pakistan.

#### Contributed Papers

1. Contributed a written paper entitled 'Prospects for observations of high-energy cosmic tau neutrinos' in XIX the International Conference on Neutrino Physics and Astrophysics (Neutrino 2000), Laurentian University, Sudbury, Canada, 16-21 June, 2000.