Dr. Guthikonda Kiran Kumar

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Curriculum Vitae

Professional Experience:

- **Dec 2013 to present: Assistant Professor** in the Department of Physics, K L University, Vaddeswaram, Guntur, A.P.
- **April 2012 to Sept 2013: Post-Doctoral Research Scientist** in the GERDA collaboration, Physik Institut, University of Zurich, Switzerland.
- **May 2009 to March 2012: Post-Doctoral Research Scientist**, in the TEXONO Group, IOP, Academia Sinica, Taipei, Taiwan.

Academic Profile:

Ph.D : Nuclear Structure (Experimental Nuclear Physics) - 2009

The Maharaja Sayajirao University of Baroda, Vadodara, India in collaboration with UGC-DAE, Consortium for Scientific Research and iThemba LABS, CapeTown, South Africa.

Thesis Title: *"Spectroscopy of Single and Collective Level Structure around Proton Shell Closures"*, under the supervision of Dr. Surjit Mukherjee.

- **Masters in Science: Physics (M.Sc) – 2004**

  School of Studies in Physics, Vikaram University, Ujjain, Madhya Pradesh, India.
- **Bachelors in Science: Mathematics, Physics, Chemistry (B.Sc) – 2002**

  Acharya Nagarjuna University, Guntur, Andhra Pradesh, India.
- **Post. Grad. Diploma in Comp. Applications (P.G.D.C.A) – 2001**

  Andhra Pradesh Electronics Limited, Hyderabad, Andhra Pradesh, India.

Project:

- **"Study of Incomplete Fusion Reactions at Energies Around the Coulomb Barrier"** Submitted to **SERB-DST – 26 Lakhs**

Awards and Merits:

- Awarded the best research presentation in Nuclear Physics category at the South African Institute of Physics (SAIP – 06) held at the University of Western Cape, Cape Town, South Africa.
- Placed among the top 10% in the National Standard Examination in Physics, conducted by the Indian Association of Physics Teachers.

Research Experience:

Current Work: I have been a part of multi-national collaboration DUNE [Deep Underground Neutrino observatory] in the capacity as an institutional board member. DUNE at the Long Baseline Neutrino Facility in the US will aid the study of Origin of Matter, Unification of Forces, Black Hole Formation.

Post-Doctoral Research (April 2012 – Sept 2013): [GERDA Collaboration]
Research and development activities of the second phase of GERDA experiment. Involved in developing the source insertion systems for calibration, their Monte Carlo Simulations and R&D of the custom designed BEGe's (Broad Energy Germanium Detectors).

Post-Doctoral Research (May 2009 – March 2012): [TEXONO Collaboration]
Research and development work on Germanium, Sodium Iodide (NaI), other ancillary detectors (plastic scintillator, Hybrid Neutron detector etc) and their electronics. Studying and improving the performance of these various detectors for Neutrino and Dark Matter studies at the Kuo-Sheng Nuclear Power Plant located on the north shore of Taiwan.

Research work during Ph.D (2004-2009):

Have performed and participated experiments with the Indian National Gamma Array at VECC, Kolkata, India and the AFRODITE array at iThemba LABS, Cape Town, South Africa. The focus of my Ph.D thesis work was to investigate the yrast and near yrast level structures of hard to reach odd-odd nuclei in the $Z \sim 20$ and $Z \sim 28$ region as well as the high-spin spectroscopy of the nuclei in the vicinity of $Z \sim 82$ magic shell closures.

Technical Skills:

- Experience in monte-carlo simulations using GEANT4.

- ♦ Hands on experience in handling various Semiconductor detectors, related instrumentation and their research and development.
- ♦ Experience in various types of radiation instruments and shielding techniques using Cosmic Ray Veto, Plastic Scintillators, NaI detectors etc.
- ♦ Experience and expertise in handling sophisticated Electronic Instruments, Modules, Data Acquisition Systems and Cryogenics.

Membership in Professional Bodies:

Life Member: Indian Physics Association (IPA)

List of Research Publications: Publications in Referred Journals

1. LBNF and DUNE: Conceptual Design Report – Volume-1 – LBNE and DUNE Projects
   R. Acciarri,… G.K. Kumar et al., **(DUNE Collaboration)**
   arXiv: 1601.05471V1 (2016)
2. LBNF and DUNE: Conceptual Design Report – Volume-2 – The Physics Program
   R. Acciarri,… G.K. Kumar et al., **(DUNE Collaboration)**
   arXiv: 1512.06418v2 (2016)
3. LBNF and DUNE: Conceptual Design Report–Volume-4 – The DUNE detectors at LBNF
   R. Acciarri,… G.K. Kumar et al., **(DUNE Collaboration)**
   arXiv: 1601.02984v1 (2016)
4. Characterization and performance of germanium detectors with sub-keV sensitivities for neutrino and dark matter experiments
   A.K. Soma,… G. Kiran Kumar, et al., **(TEXONO Collaboration)**
   NIMA, 236 (2016) 67-82
5. Limit on neutrinoless double beta decay of ^{76}Ge by GERDA
   M. Agostini,… K. K. Guthikonda, *et al.,* **(GERDA Collaboration)**
   Physics Procedia, 61 (2015) 828-837
6. Differentiation of bulk and surface events in p-type point-contact germanium detectors for light WIMP searches.
   H.B. Li,…**G. Kiran Kumar,** et al., **(TEXONO Collaboration);**
   Astroparticle Physics 56 (2014) 1-8 [IF : 4.77]
7. Result on Neutrinoless Double Beta Decay of ^{76}Ge from Phase I of the GERDA.
   M. Agostini,... **K. K. Guthikonda,** *et al.,***(GERDA Collaboration);**

PRL 111, 122503 (2013) [IF : 7.943]

8. Pulse shape discrimination for Gerda Phase I data

M. Agostini,... **K. K. Guthikonda,**... *et al.,* **(GERDA Collaboration);**

Eur. Phys. J. C 73, 2583 (2013) [IF : 5.247]

9. The background in the neutrinoless double beta decay experiment Gerda.

M. Agostini,... **K. K. Guthikonda,**... *et al.,* **(GERDA Collaboration);**

EPJC 74 (2014) 2764 [IF : 5.247]

10. Limits on spin-independent couplings of WIMP dark matter with a p-type point-contact germanium detector.

H. B. Li,... **G. Kiran Kumar** *et al*., **(TEXONO Collaboration);**

PRL 110, 261301 (2013) [IF: 7.943]

11. HEROICA: an underground facility for the fast screening of Germanium detectors.

E. Andreotti,... **K. K. Guthikonda,**... *et al.,*

JINST 8, P06012 (2013) [IF: 1.656]

12. The GERDA experiment for the search of 0νββ decay in ^{76}Ge.

K.-H. Ackermann,... **K. K. Guthikonda,**... *et al.,* **(GERDA Collaboration);**

Eur. Phys. J. C73 (2013) 2330. [IF: 5.247]

13. Measurement of the half-life of the two-neutrino double beta decay of Ge-76 with the Gerda experiment.

M. Agostini,... **K. K. Guthikonda,**... *et al.,* **(GERDA Collaboration);**

J. Phys. G. Nucl. Part. Phys. 40 (2013) 035110 [IF: 5.326]

14. New Levels in the Structure of the ^{36}Cl by ^{72}Ge(^{36}Cl, n) Reaction

G. Kiran Kumar, S. Mukherjee,… *et al.,*

Arab J Sci Engg 38 (2013) 181 – 186 [IF: 0.78]

15. Triaxial shape coexistence and new aligned band in ^{178}Os.

Raejsh Kumar,... **G. Kiran Kumar**, *et al.,*

Physical Review C 80, 054319 (2009) [IF: 3.715]

16. Absence of entrance channel effects in fission fragment anisotropies of the ^{215}Fr compound nucleus.

S. Appannababu,... **G. Kiran Kumar,** *et al.,*

Physical Review C 80, 024603 (2009) [IF: 3.715]

17. Level structure of odd-odd nucleus – ^{54}Mn

G. **Kiran Kumar**, S. Mukherjee,.. *et al.,*

J. Phys. G: Nucl. Part Phys. 35, 095104 (2008) [IF: 5.326]

18. Measurement and analysis of isomeric cross section ratio in the reaction ^{93}Nb(α, 2n)^{95}Tc: Pre-equilibrium reaction mechanism.

S. Mukherjee,... **G. Kiran Kumar** et al.,

Physical Review C 72, 014609 (2005) [IF: 3.715]

Book Chapter

R & D on sub-keV Germanium detectors for the studies on Electromagnetic properties of Neutrino

Lakhwinder Singh, **G. Kiran Kumar**, H.T. Wong

"XXI DAE-BRNS High Energy Phsyics Symposium; Vol 174, Chapter 47; **Springer Book Series"**

Manuscript Under Review:

1. Design and Performance of Germanium Detector for Neutrino and Dark Matter research

M.K. Singh, G. Kiran Kumar *et al.,* **(TEXONO Collaboration);**

Submitted to Indian Journal of Physics

2. Design and Performance of Hybrid Fast and Thermal Neutron Detector

M.K.Singh, G. Kiran Kumar, *et al.,* **(TEXONO Collaboration);**

Submitted to NIMA

Presentations in Conference/Symposium: [International]

1. R & D on sub-keV Germanium detectors for the studies on Electromagnetic properties of Neutrino

G. Kiran Kumar (TEXONO Collaboration)

XXI DAE-BRNS High Energy Symposium, IIT Guwahati, India (2014)

2. GERmanium Detector Array (GERDA): Status and Plans

G. Kiran Kumar (GERDA Collaboration)

TEVPA – 12 Conference, Mumbai, India (2012)

3. Sub-keV Germanium Detectors for Neutrino and Dark Matter Physics

G. Kiran Kumar, Henry T. Wong (TEXONO Collaboration)

II International Neutrino Summer School, Japan (2010)

4. In-beam gamma ray spectroscopy of ^{54}Mn.

G. Kiran Kumar, S. Mukherjee *et al.,* (**Best Poster Awarded in Nuclear Physics**)

Proc. of South African Institute of Physics Conference, CapeTown, SouthAfrica (2006)

[**National]**

1. Fast alpha particle emission in ^{14}N+^{197}Au reaction up to 250 MeV.

S. Mukherjee, P. Srinivasa Rao and **G. Kiran Kumar**. **(Oral)**

Proc. of NUCAR conference (2007)

2. Level Structure of ^{54}Mn populated following the ^{20}Ne+^{51}V reaction at 145 MeV.

G. Kiran Kumar, S. Mukherjee et al., **(Oral)**

Proc. of DAE Symp. on Nuclear Physics, Vol. 51, 248 (2006)

3. In-beam gamma ray spectroscopy of ^{36}Cl.

G. Kiran Kumar, S. Mukherjee et al.,

Proc. of DAE Symp. on Nuclear Physics, Vol. 50, 236 (2005)

4. Lifetime measurements in Cr and V isotopes using Centroid Shift Method and DSAM.

S. Mukhopadhyay, Krishichayan, … **G. Kiran Kumar** *et al.,*

Proc. of DAE Symp. on Nuclear Physics, Vol. 50, 238 (2005)

5. Pre-Equilibrium effects in ^{14}N +^{103}Rh reactions up to 400 MeV.

S. Mukherjee**, G. Kiran Kumar**, N. L. Singh and Anil Sharma

Proc. of DAE Symp. on Nuclear Physics, Vol. 50, 311 (2005)

6. Gamma ray spectroscopy following the ^{20}Ne +^{40}Ca reaction @150MeV.

S. Mukhopadhyay, Krishichayan, ... **G. Kiran Kumar** *et al.,*

Proc. of DAE Symp. on Nuclear Physics, Vol. 47B, 72 (2004)

7. Spectroscopy of A ~ 60 – 70 nuclei: from mid-shell to shell Closure.

A. Chakraborty, Krishichayan, ... **G. Kiran Kumar et al.,**

Proc. of DAE Symp. on Nuclear Physics, Vol. 47B, 188 (2004)

8. Performance test of INGA set-up at VECC.

R. Raut, S. Ganguly, ... **G. Kiran Kumar** et al.,

Proc. of DAE Symp. on Nuclear Physics, Vol. 47B, 578 (2004)

9. In – beam spectroscopy of ^{178}Os.

Rajesh Kumar, A. Kumar, ... **G. Kiran Kumar** *et al.,*

Proc. of DAE Symp. On Nuclear Physics, Vol. 47B, 192 (2004)

Conferences/Symposia/Workshops Attended:

1. **Emerging Trends of Advanced Functional Materials (NCAFM – 2015)**
   3rd and 4th September 2015, KL University, Green Fields, Vaddeswaram, Guntur
2. **Emerging Trends in Renewal Energy (NWETR) – 2015**
   18th & 19th March 2015, held at KL University, Green Fields, Vaddeswaram, Guntur
3. **XXI DAE-BRNS High Energy Physics Symposium**
   8th – 12th December 2014, organised by at IIT Guwahati, India
4. **Recent Trends in Fuel Cell Technologies – 2015**
   26th September 2014**,** held at KL University, Green Fields, Vaddeswaram, Guntur
5. **Nanotechnology for Sustainability of Rural India (NTSRI) - 2014**
   19th February 2014, held at KL University, Green Fields, Vaddeswaram, Guntur
6. **TeV Particle Astrophysics - 2012 Conference.**
   10th – 14th Dec 2012, held at Tata Institute of Fundamental Research, Mumbai, India
7. **24th Taiwan Spring School on Particles and Fields.**
   6th April – 9th April 2011, held at National Tsing Hua University, Hsinchu, Taiwan.
8. **II International Summer School (INSS) 2010**
   23th – 31th August 2010, held at Yokohama & J-PARC (Tokai), Japan.
9. **23rd Taiwan Spring School on Particles and Fields.**
   31th March – 3rd April 2010, held at National Cheng-Kung University, Tainan, Taiwan.
10. **Nuclear and Radiochemistry Symposium (NUCAR – 07)**
    Department of Chemistry, The MSU of Baroda, Vadodara. February 14th – 17th, (2007)
11. **51st DAE – BRNS Symposium on Nuclear Physics**
    Department of Physics, The MSU of Baroda, Vadodara. December 11th – 15th, 2006
12. **Annual Conference of the South African Institute of Physics (SAIP - 06)**
    Physics Dept, Univ of Western Cape, Cape Town, South Africa. July 4th – 7th, 2006
13. **50th DAE – BRNS Symposium on Nuclear Physics**
    Nuclear Physics Division, Bhaba Atomic Research Centre, Anushakti Nagar, Mumbai. December 12th – 16th, 2005
14. **INDO-US Workshop in "Physics with energetic heavy ions and rare isotopes: t owards a common ground between US and Indian scientists"**
    Department of Physics, Panjab University, Chandigarh. October 16th – 19th, 2005
15. **School on Nuclear Structure and Dynamics**
    VECC, Kolkata & UGC–DAE, Consortium for Scientific Research. June 20th–25th, 2005.

References

1. Prof. Surjit Mukherjee
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I hereby, declare that all the statements made in this resume are true to the best of my knowledge.

G. Kiran Kumar