

□ **Name:** DR. SUBIR SARKAR

□ **Personal Details**

- Father's Name : Late Nripendra Narayan Sarkar
- Date of birth : 10th. March 1971.
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□ **Educational Qualification**

- **H.S.L.C** – In 1987 in I division with 87% and secured 10th. Position in all over Assam under S.E.B.A.
- **H.S** – In 1989 in I division with 78% under A.H.S.E.C.
- **T.D.C** – In 1992 in I division with distinction and secured 67% under Gauhati University with honours in Physics.
- **P.G** – In 1995 in I division and secured 65% under Gauhati University with special paper in *Nuclear Physics and Cosmic Radiation*.
- **NET** – Qualified in 2002.
- **Ph. D.** – Awarded in 2003.

□ **Current Occupation:**

Presently, I am working as Asst. Professor – III (Selection Grade) in Arya Vidyapeeth College, Guwahati. Prior to my appointment in Arya Vidyapeeth College on 20th. August 2009, I had been working in Nowgong College, Nagaon, Assam since 13th. February 2003.

□ **Teaching responsibility and Topic taught**

- The topics taught in different classes are as follows –
 - ❖ Mathematical Physics
 - ❖ Mechanics
 - ❖ Heat and Thermodynamics
 - ❖ Statistical Mechanics
 - ❖ Nuclear Physics
 - ❖ Numerical Methods and Computer Programming

- Besides this, there is the responsibility of taking invigilation duty of college internal assessment, degree and higher secondary examinations.
- Checking and evaluation of answer scripts of internal assessment and University examination.

□ **Research**

• **High Energy hadron-nucleus Interaction**

I have worked on a problem related to high energy disintegration of photo emulsion nuclei under the guidance of Prof. (retd.) T. D. Goswami of Gauhati University. The title of my thesis is “*A Study of the high energy disintegration of photo emulsion nuclei*”.

I have studied emission characteristics of slow particles coming out at the later stage of high energy hadron-nucleus interaction in photographic emulsion. To study such characteristics, I have used scaled factorial moment technique and the result was compared with Monte Carlo simulated data. The idea was to unmask real dynamical fluctuation present, if any, which could have been otherwise masked by statistical nature of fluctuation. The result is interesting one which can be briefly summarized as follows –

- i) The dominance of non-statistical fluctuation over the statistical part is observed in the angular distribution of the observed slow particles.
- ii) The analysis further reveals that the observed distribution of emitted slow particles at the later stage of hadron-nucleus interaction is self-similar in nature which represents fractal behaviour.

Till now seven papers have been published in national and international refereed journal.

The Ph. D. degree was awarded in 2003.

After the submitting Ph.D thesis, I was engaged in another project headed by Prof.(retd.) T. D. Goswami and Prof. B. K. Sarma of Gauhati University, dealing basically with the monitoring the Indoor radon/thoron and their progeny levels in different types of dwellings.

• **A study of Indoor Radon and its progeny in the dwellings**

Radon is a naturally occurring radioactive gas found in soils, rock, building materials, natural gas and water. Over the past few decades, there has been a large scientific interest in the study of environmental radon. One of the main reasons is its associated health hazard, another is its wide spread use as an environmental tracer earthquake prediction. Amongst the natural decay series products, radon is an important source of natural radiation. It is estimated that 50-55% of the average annual dose from natural background radiation is contributed by ^{222}Rn alone. We have studied indoor radon concentration and exhalation of radon from soil in different places of Assam. We have also calculated the annual dose received by population.

Six papers have been published in National and International journal so far.

□ **List of Publications**

I. On the study of High Energy Nuclear Interaction by using photographic emulsion

(In National/International Journal)

1. Possible Angular Correlation in K^- -CNO interactions – Indian Journal of Physics, 1999, 73A(4), 585-589.
2. Fragmentation of Nuclei – Physics Education, Oct. – Dec. 2000.
3. Transverse flow of nuclear matter – Indian Journal of Physics, 75A(5), 553 – 556 (2001).
4. Short range correlation of slow particles emitted during high energy disintegration of atomic nuclei – Indian Journal of Pure and Applied Physics, Vol. 39, June 2001, p.p. 351 – 356.
5. Asymmetry of the slow particles during hadron-nucleus interaction – Indian Journal of Pure and Applied Physics, Vol. 40, August 2002, pp 539 – 542.
6. Intermittency of the slow particles during hadron-nucleus interaction – Czechoslovak Journal of Physics, Vol.53(2003), No.2, pages 133 – 141.
7. A study of High Energy Nuclear Disintegration – FIZIKA B 14 (2005) 4, 357 – 362.

(In Conference/Symposium Proceedings)

8. Preferential emission in the high energy disintegration of atomic nuclei – Proceedings of the D.A.E. Symposium on Nuclear Physics, 1997, 1997, 40B, 358-359
9. Characteristics of high energy disintegration in the light group of photoemulsion nuclei – Proceedings of the Annual Technical Session, 1997, Assam Science Society, 1997, A20

10. Possibility of disintegration from some intermediate clusters –Proceedings of the D.A.E. Symposium on Nuclear Physics, 1998.
11. A few aspects of 20 GeV/c p-AgBr interactions – Proceedings of the Annual Technical Session, 1998, Assam Science Society, 1998, A15
12. Fragmentation of nuclei and preferential emission – Proceedings of the Young Physicists Colloquium, SINP, Calcutta, 1999.
13. On the emission of slow particles from the disintegrating nuclei – Proceedings of the D.A.E. Symposium on Nuclear Physics, 1999, 1999,42(B), 296-297.
14. General disintegration of heavy nuclei in emulsion – Proceedings of the D.A.E. Symposium on Nuclear Physics, 1998.1999, 42(B), 274-275.
15. A few aspects of the emission of slow particles – Proceedings of the Regional conference of Physics Academy of North-East, 28th. October 2000.
16. Correlated emission of slow particles during hadron-nucleus interactions – International Symposium on Nuclear Physics, Bombay, 18-22 December 2000.
17. Slow particle emission: Is it from a thermally equilibrated system or a pre-equilibrated one? International Symposium on Nuclear Physics, Bombay, 18-22 December 2000.

II. On the study of Indoor Radon level in some dwellings by using Solid State Nuclear Track Detector (SSNTD)

(In National/International Journal)

1. Measurement of Radon and Thoron Concentration by using LR – 115 type – II Plastic Track Detector in the Environment of Brahmaputra valley, Assam, India – Radiation Measurement 36 (2003) 431-434.
2. Indoor radon/Thoron Levels in Dwellings of the Hilly Regions surrounding Guwahati, Assam – Indoor and Built Environment 2003;12:343-349. Accepted March 19,2003.

3. Study of Indoor Radon and Thoron Progeny Levels using LR-115 (type II) Solid State Nuclear Track Detectors in Some Dwellings in an around Guwahati Hilly Region. Environmental Geochemistry, Vol. 9(1), p 56-59, 2006.
4. Study of Indoor Radon and Thoron Progeny levels in the surrounding areas of Nalbari, Assam – P. C. Deka, H. Sarma, S. Sarkar, T. D. Goswami and B. K. Sarma, Indian Journal of Physics, 83(7) 1025 – 1030 (2009).
5. A Study of Indoor Radon/Thoron levels in some dwellings by using Solid State Nuclear Track Detector – H. Sarma, P. C. Deka, S. Sarkar, T. D. Goswami and B. K. Sarma, International Journal of Pure and Applied Physics, Volume 6, Number 2 (2010), pp.157-164.
6. Measurement of Indoor Radon , Thoron Progeny Levels in some dwellings by using SSNTD – H. Sarma, P. C. Deka, S. Sarkar, T. D. Goswami and B. K. Sarma, International Journal of Physics and Applications, ISSN 0974 – 3103, Vol. 5, Number 1 (2013), pp 69 – 76.

(In Conference/Symposium Proceedings)

7. Indoor Radon/Thoron Levels in Different areas of Brahmaputra Valley of Assam, India – 12th. National Symposium on SolidState Nuclear Track Detectors, D.A.V.College, Jalandhar, October 29 – 31, 2001
8. Estimation of Indoor Radon/Thoron levels around the Industrial areas of Bongaigaon in Brahmaputra Valley of Assam – 14th. National symposium on Radiation Physics, G.N.D.VUniversity, Amritsar, November 1 – 3, 2001, pp 538 – 540.
9. Indoor levels of radon/Thoron daughters in Dwellings of Brahmaputra valley of Assam – 47th. Annual Technical Session of Assam Science Society, Regional Medical research Center N E Region (ICMR), Dibrugarh, February 2002, pp 113 – 118.
10. Study of Indoor Radon and Thoron progeny levels using LR-115 (Type II) Solid – State Nuclear Track Detector in some dwellings in and around Guwahati Hilly region, Assam – Proceedings of 13th National symposium on Solid- State Nuclear Track Detectors and other applications (SSNTDs – 20003), October 16-18, 2003, Organized by department of Physics, Osmania University, Hyderabad – 500007.
11. RADON – an Environmental Hazard - A paper published in the proceedings of UGC sponsored National Seminar on “Environment and Sustainable development” held at RangiaCollege, Rangia, Assam on 10 and 11 September, 2005 and was presented orally.

12. Studies of Radon emission in some soil samples using SSNTD – A paper published in the Proceedings of 54th. Annual Technical Session of Assam Science Society, 2009, on February 4, 2009, at TezpurUniversity.
13. Study of Indoor Radon/Thoron levels in dwellings of Noonmati area – Paper presented in the 55th. Technical Session of Assam Science Society, Feb. 15, 2010 at GauhatiUniversity.
14. Study of Indoor radon / thoron concentrations and their progeny levels in Some dwellings by using solid state nuclear track detectors. Published in the International Proceeding of 10th International Workshop on the Geological Aspect of Radon Risk Mapping, ISBN 978-80-7075-754-3, pp. 211-219, (2010).Czech-Republic.
H.K. Sarma, P.C.Deka, S. Sarkar, T.D. Goswami and B.K. Sarma

□ **Seminar/Conference attended**

1. Study of Indoor Radon and Thoron progeny levels using LR – 115 (Type – II) solid state nuclear track detector in some dwellings in and around Guwahati hilly region – Submitted in the National symposium on Solid state Nuclear Track Detectors and their applications (SSNTDs – 2003), October 16 – 18, 2003, Department of physics, Osmania University, Hyderabad.
2. Attended Master resource Person’s Training Programme for N-E States and Sikkim on “International Year of Physics, 2005” held at the Institute of Engineers (India), Panbazar, Guwahati during June 15 – 17, 2005 organised by Assam Science and Technology and Environmental Council, Guwhati in collaboration with the Rashtriya Vigyan Evam Prodyogiki Sanchar Parishad and Vigyan Prasara of Department of Science and Technology, Govt. of India.
3. Attended one day Nuclear Science Centre Acquaintance Programme sponsored jointly by The North Eastern Hill University, Shillong and Nuclear Science Centre, New Delhi held at North Eastern Hill University, Shillong on 18th. July, 2005.
4. RADON – an Environmental Hazard - A paper published in the proceedings of UGC sponsored National Seminar on “Environment and Sustainable development” held at Rangia College, Rangia, Assam on 10 and 11 September, 2005 and was presented orally.
5. Participated in the WORKSHOP ON NANOTECHNOLOGY on 15th. September 2005 held at Gauhati University.

6. Participated in the National Orientation Workshop entitled “Appreciating Physics in Everyday Life” being coordinated by the NCSTC-Network with support and guidance of Rashtriya Vigyan Evam Prodyogiki Sanchar Parishad and Vigyan Prasara of department of Science and Technology, Govt. of India at Kolkata during 5 – 6 December 2005.
7. Participated in the National seminar cum awareness programme on Atomic Energy – Improving Quality of life in India under the aegis of Department of Atomic Energy, Govt. of India, organized by Veterinary Physiology, Faculty of Veterinary Science at Assam Agricultural University, Khanapara, Guwahati.
8. Participated in the 54th. Annual Technical Session of Assam Science Society at Tezpur University on February 4, 2009.
9. Participated in the 55th. Annual Technical Session of Assam Science Society at Gauhati University on February 15, 2010.

□ **Orientation/Refresher courses**

1. Participated in the Orientation Programme (OP-67) in the Academic Staff College, Gauhati University from 15th. May to 11th. June 2006.
2. Participated in the Refresher Course in Physics (IX) in the Academic Staff College, Gauhati University from 22nd. January to 11th. February 2007.
3. Participated in the Refresher Course in Physics organized by Academic Staff College, Gauhati University from 20th. February to 11th. March 2012.
4. Participated in the Refresher Course in Physics organized by Academic Staff College, NEHU from 5th. To 25th. June 2013.

□ **Role in Corporate Life**

1. Teacher-in-charge of Boy’s Common Room in 2012.
2. Member of the College Campus Development Committee.
3. Executive member of AVCTU (Arya Vidyapeeth College Teacher’s Unit) in 2013-2014.

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