Curriculum Vitae

Rahim Khabaz

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Education:

PhD (***Nuclear Physics***, July 2011), Ferdowsi University, Mashhad, Iran
Title of PhD thesis: Experimental study of scattering effect in spectrometry of neutron fields by Bonner sphere method with BF_3

M.Sc (***Nuclear Physics***, Sep. 2005), Ferdowsi University, Mashhad, Iran
Title of MSc thesis: Calculation of gamma-ray in spontaneous fission source of ^{252}Cf using Monte Carlo method

B.Sc (***Applied Physics***, July 2003), Sistan & Baluchestan University, Zahedan, Iran

Employment History:

- Visiting Researcher, *Atomic Energy Organization of iran*, Iran (Jan. 2010 - Jun. 2011)
- Assistant Professor, *Golestan University*, Iran (Sept. 2011 - Sept. 2015)
- Associate Professor, Golestan University, Iran (Sept. 2015 - Sept. 2023)
- Professor, Golestan University, Iran (Sept. 2023 - Now)

Administrative Experience

- Manager of monitoring, evaluation and quality assurance (Golestan University) (Jan. 2018 - Sept. 2020)
- Vice-Chancellor of the Faculty of Science (Sept. 2020 – May 2022)
- Director of Physics Department (Nov. 2023 - Now)

Honors and Awards:

- Ranked 1st in M.Sc., held among graduate students
- Ranked 1st in B.Sc., held among undergraduate students
- Top Researcher in Golestan University at 2013, 2015, 2019, 2021 and 2023

Research Interests:

- Radiation measurement and methods
- Application of nuclear radiations
- Radiation protection and dosimetry
- Environment radioactivity
- Physics of neutron
- Neutron activation analysis
- Gamma Irradiation
- Nuclear Medicine
- Monte Carlo methods

Publications:

1. M. Farhad Rahimi , Vahid Mirzaei , **Rahim Khabaz** (2007) *Calculation of energy levels according to 3 axial deformed nuclear model (deformation without axial symmetry).* Iranian Journal of Physics Research 7(3): 137-146.

2. **Rahim Khabaz**, Hashem Miri (2011) *Measurement of Neutron Spectrum with Multi-sphere Using BF3 and evaluation of scattering effect on spectrum*. Nuclear Technology & Radiation Protection 26: 140-146.

3. **Rahim Khabaz**, Hashem Miri (2011) *Development of a Bonner sphere spectrometer with emphasis on decreasing the contribution of scattering by using a new designed shadow cone*. Journal of Radioanalytical and Nuclear Chemistry 289: 789-794.

4. **Rahim Khabaz**, Hashem Miri (2011) *Evaluation of Response Matrix of a Multi-sphere Neutron Spectrometer with Water Moderator*. Pramana Journal of Physics 77: 599-609.

5. **Rahim khabaz**, Hashem Miri (2011) *Determination of 241Am-Be spectra using Bonner sphere spectrometer by applying shadow cone technique in calibration*. Journal of Applied Sciences 11: 2849-2854.

6. **Rahim Khabaz** (2012) *Improvement in the calibration time of absolute emission rate of radionuclide neutron source using vanadyl sulfate bath*. Applied Radiation and Isotopes 70: 2446–2450.

7. **Rahim Khabaz** (2012) *Study of a new multi-sphere spectrometer based on water moderator with a high efficiency 6LiI(Eu) detector*. Journal of Radioanalytical and Nuclear Chemistry 293: 383-389.

8. **Rahim Khabaz** (2012) *Assessment of gamma-rays generated by the spontaneous fission source ^{252}Cf using a Monte Carlo method*. Annals of Nuclear Energy 46: 76–80.

9. **Rahim Khabaz** (2012) *Appraisement of the correction factors for neutron reaction in the manganese bath using Monte Carlo calculation*. Journal of Radioanalytical and Nuclear Chemistry 293: 455–462.

10. **Rahim Khabaz** (2012) *An evaluation of a manganese bath system having a new geometry through MCNP modelling*. Radiation Protection Dosimetry 152: 400-405.

11. **Rahim Khabaz**, Reza Izadi (2013) *Quantifying the geometry correction factor and effectiveness parameter for Bonner sphere spectrometer with 3He counter*. Journal of Radioanalytical and Nuclear Chemistry 295: 1487–1493.

12. **Rahim Khabaz**, Hector Rene Vega-Carrillo (2013) *Improvement in the practical implementation of neutron source strength calibration using prompt gamma rays*. Applied Radiation and Isotopes 78: 46–50.

13. **Rahim Khabaz** (2013) *Examining the departure in response of non-point detectors due to non-uniform illumination*. Nuclear Instruments and Methods in Physics Research A 728: 145–149.

14. **Rahim Khabaz** (2014) *Evaluation of an alternative convenient irradiation system for determination of emission rate of radio-isotopic neutron sources*. Journal of Radioanalytical and Nuclear Chemistry 299: 5–12.

15. **Rahim Khabaz** (2014) *Investigation of the effects of beam divergence on the response of neutron voluminous detectors.* Journal of Radioanalytical and Nuclear Chemistry 300: 911–917.

16. **Rahim Khabaz,** Farhad Yaghobi (2014) *Evaluation of the Nonlinear Response Function and Efficiency of a Scintillation Detector Using Monte Carlo and Analytical Methods*. Asian Journal of Experimental Sciences 28: 23-31.

17. **Rahim Khabaz** (2015) *Estimation of scattering contribution in the calibration of neutron devices with radionuclide sources in rooms of different sizes*. Nuclear Technology & Radiation Protection 30 (1): 47-54.

18. **Rahim Khabaz**, Farhad Yaghobi (2015) *Design and employment of a non-intrusive γ-ray densitometer for salt solutions*. Radiation Physics and chemistry 108: 18-23.

19. **Rahim Khabaz** (2015) *Analysis of neutron scattering components inside a room with concrete walls*. Applied Radiation and Isotopes 95: 1-7.

20. **Rahim Khabaz**, Abdolmajid Izadpanah (2015) *Survey and design of an irradiation setup for measuring the amount of heavy water in a sample*. Journal of Radioanalytical and Nuclear Chemistry 303: 393-398.

21. **Rahim Khabaz**, Maryam Hassanvand (2017) *Radioactivity concentrations and dose characteristics of granite stones.* Nuclear Technology & Radiation Protection. 32(3): 275-280.

22. **Rahim Khabaz** (2018) *Study of different solutes for determination of neutron source strength based on the water bath*. Radiation Physics and Chemistry. 150: 58–63.

23. **Rahim Khabaz**, Roya Bodaghi, Mohammad Reza Benam, Vahid Zanganeh (2018) *Estimation of Photoneutrons Dosimetric Characteristics in Tissues/Organs Based on*

Corrected Simplified Model of Medical Linac. Applied Radiation and Isotopes 133: 88–94.

24. **Rahim Khabaz** (2018) *A new approach to examine the exposure and dose buildup factors for multienergy radioisotopic gamma sources with G-P analytical expression.* Radiation Physics and chemistry. Radiation Physics and Chemistry 151: 53–58.

25. **Rahim Khabaz** (2018) *Effect of each component of a LINAC therapy head on neutron and photon spectra*. Applied Radiation and Isotopes 139: 40–45.

26. Bahare Pangh, **Rahim Khabaz**, A. Izadpanah (2019) *Measurement of outdoor and indoor ambient gamma dose rate in Gorgan and Bandar-Torkman cities using gas and thermoluminescent dosimeters*. Iranian Journal of Health and Environment 12 (3): 397-408.

27. **Rahim Khabaz**, Roya Bodaghi, Mohammad Reza Benam, Vahid Zanganeh (2019). *A feasibility study to reduce photoneutrons contamination and photons in organs/tissues during radiotherapy*. Iranian Journal of Medical Physics, 7(6), 366-373.

28. **Rahim Khabaz** (2020) *Specifying the flux and dose-equivalent buildup factors for infinite slabs irradiated by radionuclide neutron sources*. Applied Radiation and Isotopes 157: 109040.

29. **Rahim Khabaz** (2020) Phantom dosimetry and cancer risks estimation undergoing 6 MV photon beam by an Elekta SL-25 linac. Applied Radiation and Isotopes, 163, 109232.

30. **Rahim Khabaz**, Hector Rene Vega-Carrillo (2020) *Assessment of Kerma coefficients for OSL dosimeters by analytical and Monte Carlo approaches*. Radiation Physics and Chemistry 173: 108875.

31. Faezeh Mohammad Rafie, **Rahim Khabaz** (2020) *Evaluation of the radiation protection capabilities of some metal oxide glasses against radioisotopic gamma sources.* Iranian Journal of Physics Research, 20(3), 557-565.

32. Aghgol Niazi, **Rahim Khabaz** (2021) *An approach to determination of dosimetric characteristics of radionuclide neutron sources with specific constants and effective quality factors*. Radiation Physics and Chemistry, 179, 109242.

33. Marzieh Yosefi, **Rahim Khabaz** (2021) *Distance-dependency of the D2O-moderated ^{252}Cf spectrum and influence on the calibration factors*. Radiation Physics and Chemistry, 179, 109270.

34. Hossein Bazrafshan, **Rahim Khabaz** (2021) *Determination of radioactivity levels of building materials and associated radiation hazards using full spectrum analysis approach.* Iranian Journal of Science and Technology, Transactions A: Science, 45(2), 753-759.

35. Nahid Rostamani, **Rahim Khabaz** (2021) *Monte Carlo simulation estimates of absorbed dose in human organs due to the external exposure by decorative granite stones*. Radiation Physics and Chemistry, 189, 109702.

36. Vahid Zanganeh, **Rahim Khabaz**, Fatemeh Aghili (2021) *Investigation the trend of different magnetic fields types on linac photon beam mode by Monte Carlo method using Geant4 toolkit*. Radiation Physics and Chemistry, 188, 109603.

37. **Rahim Khabaz** (2022). *Assessment of flux and energy buildup factors in shielding of some gamma sources used for industrial radiography*. The European Physical Journal Plus, 137(3), 344.

38. Marzieh Yosefi, **Rahim Khabaz** (2022) *Analytical evaluation of geometry correction factor and effectiveness parameter for BSS irradiated by a voluminous neutron source*. Radiation Physics and Chemistry, 201, 110466.

39. Mahdieh As-habi, **Rahim Khabaz**, Alireza Khoshbin-khoshnazar (2022) *Evaluation of neutron spectra and different fluences inside a radiotherapy room with a modified simple geometry of LINAC head*. Physica Scripta, 97(10), 105304.

40. Sina Adeli, **Rahim Khabaz** (2022) *Determination of the protective properties of materials for industrial X-ray generators having a continuous energy spectrum*. The European Physical Journal Plus, 137(9), 1064.

41. Behzad Koohi, **Rahim Khabaz** (2022) *Study of the backscattering of electron beams with energies typical of radiotherapy*. Physica Scripta, 97(12), 125301.

Books:

- A Closer Look At Gamma Ray (*Participation in writing a chapter of the book*)
- An Introduction to Radiation Detection and Application (*In Persian*)

Teaching Experience:

- I have been lecturing at *undergraduate* and *graduate* levels. The following is a list of courses I have taught:

Undergraduate Courses:

- Nuclear Physics I
- Nuclear Physics II
- Nuclear Detectors & Measurement Systems
- Reactor Physics
- Radiation Protection
- Radioisotopes and Applications
- Computer Application in Physics
- Nuclear Physics Laboratory I
- Statistical Mechanic
- Modern Physics
- Elementary Physics I (Mechanics)
- Elementary Physics II (Electromagnetism)

- Elementary Physics III (Heat & Thermodynamics)
- Physics Laboratory I
- Physics Laboratory II
- Physics Laboratory III

Graduate Courses:

- Advanced Nuclear Physics I
- Advanced Nuclear Physics II
- Advanced Nuclear Physics Laboratory
- Advanced Electrodynamics
- Interaction of Ionizing Radiation
- Special Topic in Nuclear Physics

Supervision of thesis:

- Over recent years, I have supervised (and co-supervised) 18 Msc, and 2 PhD Thesis in the experimental and theoretical nuclear physics.

Professional membership:

- Iranian Physics Society
- Iranian Nuclear Society
- Iranian Radiation Protection Society

Other activities:

- Referee for several refereed Journals in Nuclear Physics.
- Radiography Testing Level-2 (RT-II)