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:

- Faculty member, *Golestan University*, Iran (Sept. 2011 - Now)

Honors and Awards:

- Ranked 1st in B.Sc., held among undergraduate students
- Ranked 1st in M.Sc., held among graduate students
- Ranked 1st in the Ph.D. entrance examination
- 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
- 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 252Cf 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 ^{3}He 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* 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 D_2O-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.
42. Roya Boudaghi Malidarreh, Hesham M H Zakaly, **Rahim Khabaz** (2024) Monte Carlo Dosimetry of Y-90 and Ru-106/Rh-106 Disk Sources for Ocular Melanoma Treatment: Beta Dose Falloff Study. *European Physical Journal Plus* 139(6): 1–9.

43. **Rahim Khabaz**, Harith Mohamed Al-Azri (2025) Investigating the effect of age on the radiation protection quantities caused by external neutron irradiation using different ICRP reports. *Radiation Physics and Chemistry* 112868.
44. **Rahim Khabaz**, Harith Mohamed Al-Azri (2025) Analytical and Monte Carlo approaches for photon and neutron Kerma coefficient determination in gel-like polymer dosimeters. *Radiation Physics and Chemistry* 232: 112651.
45. **Rahim Khabaz**, Harith Mohamed Al-Azri (2025) Investigation of shielding and dosimetric parameters for neutrons emitted from various types of fission sources. *Annals of Nuclear Energy* 220: 111541.
46. Harith Mohamed Al-Azri, **Rahim Khabaz** (2025) Genetic algorithm optimization of neutron and gamma radiation shielding for neutron sources. *Annals of Nuclear Energy* 224: 111732.
47. **Rahim Khabaz**, Fatemeh Moradi (2025) Assessment of Effective Dose and Cancer Risks in Patients Subjected to CT scan Radiation Utilizing the Fluka Monte Carlo Code. *Radiation Physics and Chemistry* (Submitted).
48. **Rahim Khabaz**, Harith Mohamed Al-Azri (2025) Evaluation of Kerma Coefficients in Radiophotoluminescence (RPL) Materials: A Comparative Study of Analytical Method and Monte Carlo Simulation. *Annals of Nuclear Energy* (Submitted).
49. **Rahim Khabaz**, Harith Mohamed Al-Azri (2025) Evaluation of analytical and Monte Carlo methods for determining Kerma coefficients in semiconductor materials for dosimetry applications. *Nuclear Engineering and Technology* (Submitted).
50. **Rahim Khabaz**, V. P. Singh (2025) Protective Shielding Assessment for Human Organs During Cancer Therapy Using Advanced Dosimeter and Shielding Materials. *Radiation Physics and Chemistry* (Submitted).

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 Mechanics
- 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 theses:

- Over the past several years, I have supervised 18 M.Sc., 2 Ph.D., and 1 Postdoctoral thesis in experimental and theoretical nuclear physics.

Other Professional Activities:

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