

Curriculum Vitae



Mojtaba Hoseini-Ghahfarokhi, Ph.D. of Medical Physics

Assistant Professor, Department of Radiology and Nuclear Medicine, School of Para-Medical Sciences, Kermanshah University of Medical Sciences, Kermanshah, Iran

❖ Personal Background:

Name: Mojtaba

Family: Hoseini-Ghahfarokhi

Marital status: Married

Children: 2 (TWIN)

Date of Birth: 1986, September

Place of Birth: Shahrekord, Iran

Address: Department of Radiology and Nuclear Medicine, School of Para Medical Sciences, Kermanshah University of Medical Sciences, Dowlat Abad Blvd, Kermanshah, Iran

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❖ Appointment:

- **Assistant Professor (2018-present):** Department of Radiology and Nuclear Medicine, School of Para-Medical Sciences, Kermanshah University of Medical Sciences, Kermanshah, Iran

❖ Education Background:

- **Ph.D. in Medical Physics (2012-2018):**

Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran

Dissertation title: “Evaluation the effect of glucose-coated and bare gold nanoparticles on radio sensitivity of colon (HT-29) and lung (A549) cancer cell lines”

Supervisors: Dr. Zabihzadeh, Dr. Bayati

Advisors: Dr. Teimoori, Dr. Ramezani, Dr. Assarehzadegan

- **M.Sc. in Medical Physics (2009-2012):**

Isfahan University of Medical Sciences, Isfahan, Iran

Dissertation title: “Development and Implementation of the Convolution Method for Photon Dose Calculation in Radiation Therapy”

Supervisors: Dr. Jabari, Dr. Tavakoli

- **B.Sc. in Nuclear Physics (2005-2009):**

Shahrekord University, Shahrekord, Iran

❖ Teaching and Training:

- Lecturer on nuclear physics for radiobiology M.Sc. students.
- Lecturer on Radiation shielding design for radiobiology M.Sc. students.
- Lecturer on radiobiology for radiobiology M.Sc. students.
- Lecturer on application of radiation sources for radiobiology M.Sc. students.
- Lecturer on clinical radiobiology for radiobiology M.Sc. students.
- Lecturer on physics of diagnostic radiology for radiology B.Sc. students.
- Lecturer on general physics for nuclear medicine B.Sc. students.
- Lecturer on fundamental of dosimetry for radiology B.Sc. students.
- Lecturer on medical physics in anesthesiology for anesthesiology B.Sc. students.
- Lecturer on radiobiology for nuclear medicine B.Sc. students.
- Lecturer on radiation protection for radiology B.Sc. students.
- Lecturer on primary techniques of radiotherapy for nuclear medicine B.Sc. students.
- Lecturer on radiation physics for nuclear medicine B.Sc. students.

❖ Research Activities:

- **Articles:**

- Morteza Pishghadam, Sirous Nekooei, Farrokh Seilanian-Toosi, **Mojtaba Hoseini-Ghahfarokhi**, Kamran Kazemi, Mansour Zabizadeh, Ali Fatemi, "A new approach to automatic fetal brain

extraction from MRI using a variational level set method”, *Medical Physics* 2019, *accepted*.

- Alireza Doroudi, Amanollah Zarei Ahmady, Ramin Mohammadi, Mahmoud Hashemitabar, Mohammad Javad Tahmasebi Birgani, **Mojtaba Hoseini- Ghahfarokhi**, “Synthesis, in vitro evaluation of cytotoxicity and radiosensitizer activity of novel 2-(2, 4-dinitrobenzylidene) cyclohexanone derivatives against the radioresistant HT29 cell line under aerobic condition”, *Iranian Journal of Nuclear Medicine* 2019, 27(2): 118-129.
- Mansour Zabihzadeh, **Mojtaba Hoseini-Ghahfarokhi***, Vahid Bayati, Ali Teimoori, Zahra Ramezani, Ali Assarehzadegan, Morteza Pishghadam, “ Enhancement of radio-sensitivity of colorectal cancer cells by gold nanoparticles at 18 MV energy”, *Nanomedicine Journal* 2018, 5 (2): 111-120.
- Mohsen Ostovati, Nader Riahi Alam, Mansour Zabihzadeh, Mohamad Gharibvand, **Mojtaba Hoseini-Ghahfarokhi**, “The Effect of Gold Nanoparticles on Electrical Impedance of Tissue on Low Frequency Ranges”, *Journal of Biomedical Physics and Engineering* 2018, 18(3): 241-250.
- Reza Maskani, Mohammad Javad Tahmasebibirgani, **Mojtaba Hoseini-Ghahfarokhi**, Jafar Fatahiasl, “Determination of Initial Beam Parameters of Varian 2100 CD Linac for Various Therapeutic Electrons Using PRIMO”, *Asian Pac J Cancer Prev* 2015, 16 (17): 7795-801.
- Zabihzadeh M, **Ghahfarokhi M. H**, Ghalaei S. R, Arvandi S, Mashayekhi Z. “Dose Perturbation due to the Magnetic Port of

Tissue Breast Expander in Patient undergoing the Postmastectomy Radiation Therapy”. *Biomed Pharmacol J* 2016; 9 (1): 285-291.

- Mansour Zabihzadeh, Mohammad Javad Tahmasebi Birgani, **Mojtaba Hoseini-Ghahfarokhi**, Sholeh Arvandi, Seyed Mohammad Hoseini, Mahbube Fadaei, “ Dosimetric characteristics of 6 MV modified beam by physical wedges of Siemens Linear accelerator”, *Asian Pac J Cancer Prev* 2016, 17 (4): 1685-1689.
- Keyvan Jabari, Mohamad Bagher Tavakoli, **Mojtaba Hoseini-Ghahfarokhi**, “Development and Implementation of Convolution Algorithm to Calculate Photon Dose of Photon Beams in Radiotherapy”, *Journal of Isfahan Medical School* 2012, 30(198): 1-9
- Barat Barati, Mansour Zabihzadeh, Mohammad Javad Tahmasebi Birgani, Nahid Chegini, **Mojtaba Hoseini-Ghahfarokhi**, Jafar Fatahiasi, “Assessment of two hemispherical and hemispherical-conical miniature sources used in electronic brachytherapy using Monte Carlo Simulation”, *Electronic Physician* 2017, 9(2): 3845-3856.
- Morteza Pishghadam, Kamran Kazemi, Mansour Zabihzadeh, Mohammad Javad Tahmasebi Birgani, Sirous Nekooei, **Mojtaba Hoseini-Ghahfarokhi**, Seyed-Alireza Esmaili, “A Review of Brain Extraction Techniques in Fetal MRI”, *IJBR* 2016, 7(Special Issue 2): 317-321.
- Nahid Chegeni, Khadijeh Hosseini, Hojattollah Shahbazian, Reza Maskani, **Mojtaba Hoseini-Ghahfarokhi**, Farzaneh Mirkhaghani, Soudabeh Raja Eskandari, “Validation of the Linac Varian Head

Simulated by BEAMnrc Code for 6MV Photon Energy”,

Jundishapur Sci Med J 2016, 15(5): 551-561

- Seyed Rabee Mahdavi, Mohammad Reza Ay, Mansour Zabihzadeh, Mahmoud Allahverdi, Majid Shahriari, **Mojtaba Hoseini-Ghahfarokhi**, “A full quantitative survey of 18 MV photon beam from 2100 C/D-Varian clinical linear accelerator with and without flattening filter”, *IJRR 2019, 17(1):137-146*.
- Mansour Zabihzadeh, Hadi rezaee, Seyed Mohammad Hosseini, Mostafa Fegghi, **Mojtaba Hoseini-Ghahfarokhi**, “Improvement of dose distribution in ocular brachytherapy with 125I seeds-20mm COMS plaque followed to loading of choroidal tumor by gold nanoparticles”, *JCRT 2019,15(3):504-511*.
- **Participate in Congress &Conferences:**
 - **Mojtaba Hoseini-Ghahfarokhi**, Mansour Zabihzadeh, Vahid Bayati, Ali Teimoori, Zahra Ramezani, “Gold nanoparticles as a radio-sensitizer of colon cancer cells at high megavoltage energies: an In-Vitro study”, *12th Iranian Congress of Medical Physics (ICMP), Jul 2018, Tehran, Iran*.
 - **Mojtaba Hoseini-Ghahfarokhi**, Mansour Zabihzadeh, Vahid Bayati, Ali Teimoori, Zahra Ramezani, “Gold nanoparticles can induce more apoptosis and double strand breaks on HT-29 cells irradiated by 18 MV photon”, *12th Iranian Congress of Medical Physics (ICMP), Jul 2018, Tehran, Iran*.
 - **Mojtaba Hoseini-Ghahfarokhi**, Raziye Fayazi, “Carbon Nanotubes as Near Infrared Radiation (NIR) Absorber for Cancer Treatment”,

12th Iranian Congress of Medical Physics (ICMP), Jul 2018, Tehran, Iran.

- **Mojtaba Hoseini-Ghahfarokhi**, Mansour Zabihzadeh, Zohreh Mashayekhi, Sasan Razmjoo-Ghalaei, Sholeh Arvandi, “Metallic Port of Breast Tissue Expander Affects Dose Distribution in Patients Undergoing Postmastectomy Radiation Therapy: A Monte Carlo Study”, *2th National Seminar on Optimization in Radiotherapy, Apr 2017, Mashhad, Iran.*
- **Mojtaba Hoseini-Ghahfarokhi**, Mansour Zabihzadeh, Mahboubeh Fadaei, Sholeh Arvandi, “A Monte Carlo Study on Dosimetric Characteristics of Symmetric and Asymmetric Wedged Fields of 6 MV Photon Beams”, *2th National Seminar on Optimization in Radiotherapy, Apr 2017, Mashhad, Iran.*
- **Mojtaba Hoseini-Ghahfarokhi**, Keyvan Jabari, Mohamad Bagher Tavakoli, “Development and implementation of Convolution algorithm to calculate 6 MV photon beam dose using MATLAB code”, *11th Iranian Conference of Medical Physics, Nov 2014, Tehran, Iran.*
- **Mojtaba Hoseini-Ghahfarokhi**, Reza Maskani, Mohammad Javad Tahmasebi Birgani, “Determination of primary characteristics of electron beam of Varian 2100 CD Linac for Various Therapeutic Electrons Using PRIMO”, *7th Congress of student research, Mar 2015, Ahvaz, Iran.*
- **Mojtaba Hoseini-Ghahfarokhi**, Mansour Zabihzadeh, Mohammad Javad Tahmasebi Birgani, Mahbube Fadaei, “Dosimetric characteristics of 6 MV modified beam by physical wedges of

Siemens Linear accelerator”, *First South West Congress of Student Research Committees, Mar 2016, Ahvaz, Iran.*

- **Workshops:**

- **Running** the workshop on behalf of Medical School Education Development Office (EDO) with the title: “***BEAMnrc Monte-Carlo codes training for radiation beam simulation***”, Jun 2019, Kermanshah, Iran.
- **Running** the national workshop on behalf of Iranian Association of Medical Physics with the title: “***BEAMnrc Monte-Carlo codes training for radiation beam simulation***”, Sep 2018, Tehran, Iran.
- **Running** the first national workshop on behalf of Iranian Association of Medical Physics with the title: “***BEAMnrc Monte-Carlo codes training for radiation beam simulation***”, Jun 2017, Tehran, Iran.
- **Running** a workshop with the title: “***BEAMnrc & DOSXYZnrc Monte-Carlo codes training for radiation beam simulation***” for postgraduate students, Mar 2014, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran.
- **Running** a workshop with the title: “***BEAMnrc & DOSXYZnrc Monte-Carlo codes training for radiation beam simulation***” for postgraduate students, Nov 2014, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran.
- Participated in international workshop entitled: “***Physics of Advanced Radiation Therapy***”, Nov 2011, Shiraz, Iran.
- Participated in workshop entitled: “***Radiopharmaceuticals and their Applications in Nuclear Medicine***”, Feb 2014, Ahvaz, Iran.

- Participated in workshop entitled: “**Principals of IMRT Verification**”, Nov 2014, Tehran, Iran.
- Participated in workshop entitled: “**Quality control of film-screen Mammography systems**”, Nov 2014, Tehran, Iran.
- Participated in workshop entitled: “**Stem cells culture and tissue engineering**”, Feb 2015, Ahvaz, Iran.
- Participated in workshop entitled: “**Immunohistochemistry**”, Mar 2015, Ahvaz, Iran.
- Participated in workshop entitled: “**Writing of Review Papers**”, May 2015, Ahvaz, Iran.
- Participated in workshop entitled: “**GEANT4 Monte-Carlo code training course**”, Jun 2016, Ahvaz, Iran.
- Participated in webinar entitled: “**Graphene: Introduction, Properties and Applications**”, Dec 2016, Iran Nanotechnology Initiative Council.
- Participated in webinar entitled: “**Transmission Electron Microscopy, TEM**”, Mar 2017, Iran Nanotechnology Initiative Council.
- **Projects:**
 - “**Design and development of a home-made treatment planning system to calculate photon dose in radiotherapy based on MATLAB code**”, Isfahan University of Medical Sciences (in progress).
 - “**Validation of predicted model of Varian 2100 C in PRIMO Monte-Carlo code for various energies of electron beam**”, Ahvaz Jundishapur University of Medical Sciences (finished).

- **“Dosimetric characteristics of Flattening filter free photon beam of Varian 2100 C/D Linac”**, Ahvaz Jundishapur University of Medical Sciences (**finished**).

❖ Certificates:

- **Advanced Course in Radiation Protection of Medical Centers**,
Organized by: Atomic Energy Organization of Iran (AEOI), Sep 2013, Tehran, Iran.
- **2nd Workshop on Photon Beams Clinical Dosimetry**,
Organized by: Iranian Association of Medical Physics (IAMP), Aug 2014, Isfahan, Iran.

❖ Honors and Awards:

- 1st rank between Medical Physics Ph.D. students graduated at Ahwaz University of Medical Sciences, Ahwaz, Iran, 2017.
- Best poster presentation for *“A Monte Carlo Study on Dosimetric Characteristics of Symmetric and Asymmetric Wedged Fields of 6 MV Photon Beams”*, 2th National Seminar on Optimization in Radiotherapy, Apr 2017, Mashhad, Iran.

❖ Manuscript Reviewer:

- **Iranian Journal of Medical Physics**, official journal of Iranian Association of Medical Physics (IAMP).

❖ Professional Memberships:

- **2009-Present:** Iranian Association of Medical Physics (IAMP)

- **2013-Present:** Iranian Radiation Protection Society (IRPS)

❖ **EXPERIENCE AND SKILLS SUMMARY:**

✓ *Biological techniques:*

- **Cancer and Normal cell Culture**
- **Flow cytometry**
- **Apoptosis assay**
- **MTT assay**
- **Cell cycle assay**
- **Immunofluorescence microscopy**
- **Western blot**
- **Clonogenic survival assay**

✓ *Analytical chemistry and nanoparticle characterization methods:*

- **Transmission Electron Microscopy (TEM)**
- **Atomic Absorption Spectroscopy (AAS)**
- **Dynamic Light Scattering (DLS)**
- **ICP-MS**
- **FTIR**
- **UV-Vis spectroscopy**

✓ *Nanoparticle Synthesis:*

- **Gold nanoparticles synthesis and coating glucose on their surfaces**

✓ *Modeling Codes and Professional Software:*

- **BEAMnrc & DOSXYZnrc**

- MCNPX2.6
- PRIMO
- CERR
- OriginLab
- WinXcom
- Flowjo
- ModFit LT
- MedCalc
- Endnote
- Prism

✓ *Programming:*

- Fortran 90
- MATLAB

❖ **Current Research Interests:**

I'm interested in radiotherapy particularly the application of Monte Carlo methods in verification of treatment plans and assessment of new radiation therapy techniques. In addition, another my research favorite is Nanomedicine includes utilizing nanoparticles for diagnosis and treatment of cancers as radio-sensitizers, contrast agents, also Nano carriers for drug delivery, radionuclide labeling as well as bio-conjugation of aptamers, antibodies and peptides to nanoparticles for targeted cancer imaging and therapy.