Stanford

Benjamin Pooya Fahimian

Clinical Associate Professor, Radiation Oncology - Radiation Physics

Bio

ACADEMIC APPOINTMENTS

- Clinical Associate Professor, Radiation Oncology - Radiation Physics

ADMINISTRATIVE APPOINTMENTS

- Associate Director, Medical Physics Residency Program, Department of Radiation Oncology, Stanford University, (2014-2018)
- Brachytherapy Physics Lead, Department of Radiation Oncology, Stanford University, (2013- present)

HONORS AND AWARDS

- Unsung Hero Award, Department of Radiation Oncology, Stanford University (2015)
- Best in Physics, American Association of Physicists in Medicine National Conference, Development of Trajectory Modulated Arc Therapy (2015)
- Principal Investigator, NIH STTR Grant 1R41EB014605-01A1 (2012-2013)
- Co-Principal Investigator, UC Discovery Grant # IT107-10166a - Competative Renewal (2011-2012)
- ASTRO Recognition Award, American Society for Radiation Oncology, Resident Recognition Award in Radiation Physics (2011)
- Norm Baily Award, American Association of Medical Physicists SCC (2009)
- Leo P. Delsasso Fellowship, Department of Physics and Astronomy, UCLA (2005-2006)
- Mentorship Fellowship, University of California, Los Angeles (2007-2008)
- Co-Principal Investigator, UC Discovery Grant # IT107-10166 (2008-2011)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- AAPM Board of Directors Representative, American Association Medical Physicists, N. California Chapter (2017 - present)
- Voting Member, Society of Directors of Academic Medical Physics Program
- Working Group on Recommendations for Radiotherapy External Beam Quality Assurance, Voting Member, American Association of Physicists in Medicine
- Member, American Brachytherapy Society
- Associate Member, American Society for Radiation Oncology
- Member, American Association of Physicists in Medicine

PROFESSIONAL EDUCATION

- Board Certification, Diplomate of the American Board of Radiology , Therapeutic Medical Physics (2013)
- Residency, Stanford University , Therapeutic Medical Physics (CAMPEP Accredited) (2012)
- Ph.D., University of California, Los Angeles , Biomedical Physics (CAMPEP Accredited) (2010)

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Brachytherapy (Prostate, Gynecological, and Ocular Carcinoma)

High Dose Rate Brachytherapy Delivery Techniques

Stereotactic Radiosurgery

Trajectory Modulated Arc Therapy

Total Body and Total Skin Irradiation Techniques

Image Guided Radiotherapy

Publications

PUBLICATIONS

- **TU-CD-304-01: FEATURED PRESENTATION and BEST IN PHYSICS (THERAPY): Trajectory Modulated Arc Therapy: Development of Novel Arc Delivery Techniques Integrating Dynamic Table Motion for Extended Volume Treatments.** *Medical physics*
  Chin, E., Otto, K., Hoppe, R., Million, L., Loo, B., Koong, A., Xing, L., Hsu, A., Fahimian, B.
  2015; 42 (6): 3598-?

- **Seeing the invisible: Direct visualization of therapeutic radiation beams using air scintillation** *MEDICAL PHYSICS*
  Fahimian, B., Ceballos, A., Tuerkcan, S., Kapp, D. S., Pratx, G.
  2014; 41 (1)

- **Trajectory modulated prone breast irradiation: A LINAC-based technique combining intensity modulated delivery and motion of the couch** *RADIOTHERAPY AND ONCOLOGY*
  Fahimian, B., Yu, V., Horst, K., Xing, L., Hristov, D.
  2013; 109 (3): 475-481

- **Radiation dose reduction in medical x-ray CT via Fourier-based iterative reconstruction** *MEDICAL PHYSICS*
  Fahimian, B. P., Zhao, Y., Huang, Z., Fung, R., Mao, Y., Zhu, C., Khatonabadi, M., DeMarco, J. J., Osher, S. J., McNitt-Gray, M. F., Miao, J.
  2013; 40 (3)

- **Single-scan patient-specific scatter correction in computed tomography using peripheral detection of scatter and compressed sensing scatter retrieval** *MEDICAL PHYSICS*
  Meng, B., Lee, H., Xing, L., Fahimian, B. P.
  2013; 40 (1)

- **Scatter correction in cone-beam CT via a half beam blocker technique allowing simultaneous acquisition of scatter and image information** *MEDICAL PHYSICS*
  Lee, H., Xing, L., Lee, R., Fahimian, B. P.
  2012; 39 (5): 2386-2395

- **Low-dose x-ray phase-contrast and absorption CT using equally sloped tomography** *PHYSICS IN MEDICINE AND BIOLOGY*
  Fahimian, B. P., Mao, Y., Cloetens, P., Miao, J.
  2010; 55 (18): 5383-5400

- **Antiproton radiotherapy: peripheral dose from secondary neutrons** *Hyp. Interact.*
  Fahimian BP, DeMarco J, Keyes R, Bassler N, Iwamoto K, Zankl M, Holzscheiter M
  2009; 194 (1): 313-318

- **Flexible optically stimulated luminescence band for 1-D in vivo radiation dosimetry.** *Physics in medicine and biology*
  Kim, T. J., Jung, K., Fahimian, B. P., Pratx, G.
  2018

- **Binary moving-blocker-based scatter correction in cone-beam computed tomography with width-truncated projections: proof of concept** *PHYSICS IN MEDICINE AND BIOLOGY*
  Lee, H., Fahimian, B. P., Xing, L.

2017; 62 (6): 2176-2193

- **Stereotactic Arrhythmia Radioablation (STAR) of Ventricular Tachycardia: A Treatment Planning Study.** *Cure¯us*
  Wang, L., Fahimian, B., Soltys, S. G., Zei, P., Lo, A., Gardner, E. A., Maguire, P. J., Loo, B. W.
  2016; 8 (7)

- **Trajectory Modulated Arc Therapy: A Fully Dynamic Delivery With Synchronized Couch and Gantry Motion Significantly Improves Dosimetric Indices Correlated With Poor Cosmesis in Accelerated Partial Breast Irradiation** *INTERNATIONAL JOURNAL OF RADIATION ONCOLOGY BIOLOGY PHYSICS*
  Liang, J., Atwood, T., von Eyben, R., Fahimian, B., Chin, E., Horst, K., Otto, K., Hristov, D.
  2015; 92 (5): 1148-1156

- **MO-FG-BRD-01: Real-Time Imaging and Tracking Techniques for Intrafractional Motion Management: Introduction and KV Tracking.** *Medical physics*
  Fahimian, B.
  2015; 42 (6): 3563-?

- **Stereotactic ablative radiotherapy for the treatment of refractory cardiac ventricular arrhythmia.** *Circulation. Arrhythmia and electrophysiology*
  Loo, B. W., Soltys, S. G., Wang, L., Lo, A., Fahimian, B. P., Iagaru, A., Norton, L., Shan, X., Gardner, E., Fogarty, T., Maguire, P., Al-Ahmad, A., Zei, et al
  2015; 8 (3): 748-750

- **TU-AB-201-06: Evaluation of Electromagnetically Guided High- Dose Rate Brachytherapy for Ablative Treatment of Lung Metastases.** *Medical physics*
  Pinkham, D. W., Shultz, D., Loo, B. W., Sung, A., Diehn, M., Fahimian, B. P.
  2015; 42 (6): 3595-?

- **WE-AB-BRB-02: Development of a Micro-Sized Dosimeter for Real-Time Dose Monitoring and Small Field Dosimetry.** *Medical physics*
  Volotskova, O., Jenkins, C., Fahimian, B., Xing, L.
  2015; 42 (6): 3649-?

- **Dual-gated volumetric modulated arc therapy** *RADIATION ONCOLOGY*
  Fahimian, B., Wu, J., Wu, H., Geneser, S., Xing, L.
  2014; 9

- **Quality control procedures for dynamic treatment delivery techniques involving couch motion.** *Medical physics*
  Yu, V. Y., Fahimian, B. P., Xing, L., Hristov, D. H.
  2014; 41 (8): 081712-?

- **Dual-Gated Volumetric Modulated Arc Therapy.** *Radiation oncology*
  Fahimian, B., Wu, J., Wu, H., Geneser, S., Xing, L.
  2014; 9: 209-?

- **Enhancement of four-dimensional cone-beam computed tomography by compressed sensing with Bregman iteration** *JOURNAL OF X-RAY SCIENCE AND TECHNOLOGY*
  Choi, K., Fahimian, B. P., Li, T., Suh, T., Lei, X.
  2013; 21 (2): 177-192

- **Binary Moving Blocker-based Scatter Correction for Single Scan Cone Beam CT System With Off-Centered Detector** *54th Annual Meeting of the American-Society-for-Radiation-Oncology (ASTRO)*
  LEE, H., Fahimian, B. P., Xing, L.
  ELSEVIER SCIENCE INC.2012: S797–S797

- **Single Scan Scatter Correction in Cone Beam CT Using a Stationary Boundary Blocker and Compressed Sensing-based Scatter Estimation** *54th Annual Meeting of the American-Society-for-Radiation-Oncology (ASTRO)*
  Meng, B., LEE, H., Xing, L., Fahimian, B. P.
  ELSEVIER SCIENCE INC.2012: S82–S83

- **Prone Partial Breast Coronal Arc Irradiation: Combining Intensity Modulated Delivery With Dynamic Motion of the Couch** *54th Annual Meeting of the American-Society-for-Radiation-Oncology (ASTRO)*
  Fahimian, B. P., Yu, V., Xing, L., Horst, K., Hristov, D.
  ELSEVIER SCIENCE INC.2012: S214–S214

- **Prospectively Gated CBCT for Volumetric Image Guidance in SBRT** *54th Annual Meeting of the American-Society-for-Radiation-Oncology (ASTRO)*
  Fahimian, B. P., Xing, L.

ELSEVIER SCIENCE INC.2012: S199–S200

- **A Binary Moving Blocker-Based Scatter Correction Technique for Cone-Beam CT with Width-Truncated Projections** *54th Annual Meeting and Exhibition of the American-Association-of-Physicists-in-Medicine (AAPM)*
  LEE, H., Fahimian, B., Xing, L.
  AMER ASSOC PHYSICISTS MEDICINE AMER INST PHYSICS.2012: 3892–92
- **Improving Respiration-Gated IMRT Delivery Efficiency by Dual-Gating at Inhale and Exhale: Evaluation of Planning On Eclipse and the Need for Accurate Image Registration** *54th Annual Meeting and Exhibition of the American-Association-of-Physicists-in-Medicine (AAPM)*
  Geneser, S., Fahimian, B., Xing, L.
  AMER ASSOC PHYSICISTS MEDICINE AMER INST PHYSICS.2012: 3671–71
- **Single-Scan Scatter Correction in Cone Beam CT Using Stationary Boundary Blockers and Compressed Sensing** *54th Annual Meeting and Exhibition of the American-Association-of-Physicists-in-Medicine (AAPM)*
  Meng, B., Xing, L., Fahimian, B.
  AMER ASSOC PHYSICISTS MEDICINE AMER INST PHYSICS.2012: 3891–91
- **Dual Gated Volumetric Modulated Arc Therapy** *54th Annual Meeting and Exhibition of the American-Association-of-Physicists-in-Medicine (AAPM)*
  Wu, J., Fahimian, B., Wu, H., Xing, L.
  AMER ASSOC PHYSICISTS MEDICINE AMER INST PHYSICS.2012: 3909–
- **A Bayesian approach to real-time 3D tumor localization via monoscopic x-ray imaging during treatment delivery** *MEDICAL PHYSICS*
  Li, R., Fahimian, B. P., Xing, L.
  2011; 38 (7): 4205-4214
- **Scatter-free CBCT Imaging using a Beam Blocker and an Incoherence-enhancing Compressed Sensing Method**
  LEE, H., Fahimian, B. P., LEE, R., Xing, L.
  ELSEVIER SCIENCE INC.2011: S59–S60
- **Accelerated Partial Breast Arc Irradiation using Synchronous Trajectories of the Couch and Gantry: Geometric and Dosimetric Evaluation**
  Fahimian, B. P., Xing, L., Horst, K. C., Hristov, D. H.
  ELSEVIER SCIENCE INC.2011: S199–S199
- **Energy Modulated Electronic Brachytherapy**
  Fahimian, B. P., Chen, T., DeMarco, J. J., Xing, L.
  ELSEVIER SCIENCE INC.2011: S201–S201
- **Image Guidance On the TrueBeam STx: Evaluation of CBCT Imaging Dose and Quality**
  Maxim, P. G., Fahimian, B. P., Xing, L.
  ELSEVIER SCIENCE INC.2011: S849–S850
- **Reducing Gated IMRT Delivery Times: Dual-gated Delivery Optimization and Implementation**
  Geneser, S., Fahimian, B., Kielar, K., Xing, L.
  ELSEVIER SCIENCE INC.2011: S202–S202
- **Quantitative 3D imaging of whole, unstained cells by using X-ray diffraction microscopy** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Jiang, H., Song, C., Chen, C., Xu, R., Raines, K. S., Fahimian, B. P., Lu, C., Lee, T., Nakashima, A., Urano, J., Ishikawa, T., Tamanoi, F., Miao, et al
  2010; 107 (25): 11234-11239
- **Development and Optimization of Regularized Tomographic Reconstruction Algorithms Utilizing Equally-Sloped Tomography** *IEEE TRANSACTIONS ON IMAGE PROCESSING*
  Mao, Y., Fahimian, B. P., Osher, S. J., Miao, J.
  2010; 19 (5): 1259-1268
- **Three-dimensional structure determination from a single view** *NATURE*
  Raines, K. S., Salha, S., Sandberg, R. L., Jiang, H., Rodriguez, J. A., Fahimian, B. P., Kapteyn, H. C., Du, J., Miao, J.
  2010; 463 (7278): 214-217
- **Three-dimensional coherent x-ray diffractive imaging from a single view** *Conference on Lasers and Electro-Optics (CLEO)/Quantum Electronics and Laser Science Conference (QELS)*

Sandberg, R. L., Raines, K. S., Salha, S., Jiang, H., Rodriguez, J. A., Fahimian, B. P., Kapteyn, H. C., Murnane, M. M., Du, J., Miao, J.
IEEE.2010

- **Radiation dose reduction and image enhancement in biological imaging through equally-sloped tomography** *JOURNAL OF STRUCTURAL BIOLOGY*
  Lee, E., Fahimian, B. P., Iancu, C. V., Suloway, C., Murphy, G. E., Wright, E. R., Castano-Diez, D., Jensen, G. J., Miao, J.
  2008; 164 (2): 221-227