

Huixiao Chen, PhD, DABR
Assistant Professor
Yale University School of Medicine
Yale New Haven Health
Dept. of Therapeutic Radiology

Education:

08/1991-06/1995 BS, Biomedical Engineering, Zhejiang University, China
08/1995-06/1998 MS, Bioelectromagnetics, Zhejiang University, China
08/2005-06/2010 PhD, Medical physics, University of Heidelberg, Germany

Career/Academic Appointments:

07/1998-06/2003 Medical Physicist, Department of Radiation Oncology, 2nd Affiliated Hospital, Zhejiang University School of Medicine, China
TPS commissioning; 3D and IMRT treatment planning on XIO(CMS) and Xknife (RSA); IMRT QA, Linac QA; Animal study for conformal radiotherapy of pancreatic malignancy and the dose impact to the duodenum.

12/2010-02/2011 Postdoctoral Fellow in medical physics, Department of Radiation Oncology, Virginia Commonwealth University, USA
Evaluation of dose mapping errors via use of a volume-based dose mapping method on Pinnacle TPS (mentor: Dr. Jeffrey Siebers)

01/2012-02/2013 Postdoctoral Fellow in medical physics, Department of Radiation Oncology, Massachusetts General Hospital, Harvard University, USA
Multi-criteria optimization informed VMAT planning on Raystation TPS (mentor: Dr. David Gierga)

07/2014-06/2016 Resident, Medical Physics, Department of Therapeutic Radiology, Yale New Haven Hospital, Yale University, USA

07/2016-present Clinical Assistant Professor, Department of therapeutic radiology, Yale New Haven Hospital, Yale University, USA
Primary physicist of RefleXion PET-Linac (leading clinical physics IGRT/Scintix BGRT projects); Primary physicist of Surface imaging system (CRAD) at main campus; Primary physicist of Orthovoltage machine; Primary physicist of Rapid Planning system

Ongoing Projects/RefleXion Pilot Grants:

04/2024-present

1. Investigating the use of FDG and new PET tracers for SCINTIX
2. Investigating the efficiency of SCITIX for treating multiple tumors using a single ^{18}F -FDG injection

Honors & Recognition:

2004 DAAD (German Academic Exchange Service) full scholarship holder for German language and culture courses in Goethe-Institute and PhD study in Germany

Patent:

1998 Magnetic cyclotron electrochemical cancer treatment device. Huixiao Chen, Zhuming Yu, Guozhang Chen. CN123899A, CN1121881C, China

Invited Speaking Engagements and Presentations

1. “Commissioning and verification of PrecisePLAN R2.20”, ESTRO/Elekta User Meeting 2007, Barcelona, Spain
2. “Measurement-based approach for verification of XVMC”, DEGRO 2008, Vienna, Austria
3. “MCO-informed VMAT planning for prostate cancer”, Young Investigators Symposium, NEAAPM 2012, Boston, USA
4. “VMAT Dosimetry lecture”, Massachusetts General hospital, 2013, Boston, USA
5. “Knowledge-based Treatment planning”, Yale New Haven hospital, 2015, New Haven, USA
6. “A simple predictor for V105 in breast tangential treatment planning”, AAPM 2017, Denver, USA
7. “A small footprint couch-top support device for image guided radiotherapy of heavy patients”, Yale New Haven hospital, 2023, New Haven, USA
8. “Reflexion X1 PET-Linac system and IGRT/BGRT commissioning”, CAMPS Meeting, 2024, New Haven, USA
9. “Clinical implementation of CRAD surface imaging system at Smilow, and beyond”, Yale New Haven Hospital, 2024, New Haven, USA
10. “Implementation considerations and future potential for SCINTIX therapy panel discussion”, ASTRO 2024, Washington DC, USA
11. “Characterizing and modeling higher-order motions of collimator subsystem on a 60RPM gantry Linac for improved small target dosimetry”, AAPM 2025, Washington DC, USA
12. “¹⁸F-FDG PET Image metric analysis of clinical patients treated using Biological-guided Radiotherapy (BgRT)”, ASTRO 2025, San Francisco, USA

Professional Service:

Peer Reviewer:

2012-present	Journal of Physics in Medicine and Biology
2013-present	Journal of Medical Dosimetry
2022-present	Journal of Medical Physics
2019-present	Journal of Applied Clinical Medical Physics

Professional Organizations:

2012-present	American Association of Physicists in Medicine (AAPM)
2021-present	American Society for Radiation Oncology (ASTRO)

Publications:

Peer-Reviewed Original Research

1. **Huixiao Chen**, Guozhang Chen. Experimental study of temperature elevation by 915 MHz ferromagnetic resonance. *Computerized Tomography Theory Applications*. 1998; 7(1):20-23
2. Zuming Yu, Guozhang Chen, **Huixiao Chen**. Electrochemotherapy with cyclotron method: a new system of treatment for cancer. *Chinese Journal of Medical Instrumentation*. 1998; 4(11):23-24
3. Guozhang Chen, **Huixiao Chen**. The remarkable effect on treatment of malignancy by electrochemotherapy with cyclotron method. *Medical Devices and Health Care Magazine*. 1998 (Chinese); (6):78-84
4. Guozhang Chen, **Huixiao Chen**. A research hotspot in bioelectromagnetics --- non-thermo reaction. *Physics (Chinese)*. 1998; 27(3): 151-155
5. Guangwei Yu, **Huixiao Chen**. Maintenance and aging judgement of electron gun of SIEMENS accelerator. *Chinese Journal of Radiation Oncology*. 2003; 312(4): 28
6. Guangwei Yu, **Huixiao Chen**. Uncertainties on delineation of Target Volume on CT image for breast cancer. *Chinese Journal of Radiological Medicine and Protection*. 2005;(3): 84-85

7. Guangwei Yu, Shuhui Jin, Yongjie Shui, **Huixiao Chen**. Evaluation of three-dimensional conformal radiotherapy based on dose distribution. *Zhongguo Yi Liao Qi Xie Za Zhi*. 2005, 29: 210-1.
8. Ramesh Boggula, Friedlieb Lorenz F, **Huixiao Chen**, Gansemer C, Hansjoerg Wertz, Lutz Mueller, Frederik Wenz, et al. Commissioning of a system to correlate dose measurements to patient anatomy. *International Journal of Radiation Oncology, Biology, Physics*. 2008; 72(1): S662; DOI:10.1016/j.ijrobp.2008.06.354; Project: COMPASS
9. **Huixiao Chen**, Frank Lohr, Peter Fritz, Frederik Wenz, Barbara Dobler, Friedlieb Lorenz, Werner Mühlnickel. A comparison of absolute dose and dose distribution between Pencil Beam- and Monte Carlo-algorithms based on actual patient CT scans. *International Journal of Radiation Oncology Biology Physics*. 2010. Nov 1; 78(3):955-63.
10. **Huixiao Chen**, David L Craft, David P Gierga. Multi-Criteria Optimization informed VMAT planning. *Medical Dosimetry*. 2014; 39(1): 64-73
11. **Huixiao Chen**, Brian A Winey, Juliane Daartz, Kevin S Oh, John H Shin, David P Gierga. Efficiency gains for Spinal Radiosurgery using Multi-criteria optimization IMRT guided VMAT planning. *Practical Radiation Oncology*. 2015; 5(1): 49-55
12. **Huixiao Chen**, Kevin Morley, Ronnie Rodriguez, Emily Draeger, Muhammed Shafiq Hassan, Zhe (Jay) Chen. A small footprint couch-top support device for image-guided radiotherapy of heavy patients. *Journal of Applied Clinical Medical Physics*. 2022; 23(12), e13788
13. Fada Guan, **Huixiao Chen**, Emily Draeger, Yuting Li, Resat Aydin, Christopher J. Tien, Zhe (Jay) Chen. Characterization of Gafchromic TM EBT4 film with clinical KV/MV photons and MeV electrons. *Precision Radiation Oncology*. 2023; 7(2): 81-146
14. Weili Zhong, Zhe (Jay) Chen, Minyoung Lee, Fada Guan, **Huixiao Chen**, Dae Yup Han. Measurements of small field output correction factors on a RefleXion treatment machine. *Precision Radiation Oncology*. 2024; <http://doi.org/10.1002/pro6.70006>

Conference Posters

1. **Huixiao Chen**, Martin Polednik, Yasser Abo-Madyan, Hansjoerg Wertz, Frank Lohr, Frederik Wenz, Friedlieb Lorenz. Influence of rounded leaf end on dose calculation for a typical breast IMRT patient plan. *DEGRO 2008*, Vienna, Austria
2. **Huixiao Chen**, Friedlieb Lorenz, Martin Polednik, Frank Schneider, Volker Steil, Frank Lohr, Yasser Abo-Madyan, Markus Alber, Frederik Wenz, Juergen Hesser. Measurement-based approach for verification of XVMC. *DEGRO 2008*, Vienna, Austria
3. **Huixiao Chen**, Nahla Saleh-Sayah, William T Watkins, Chenyu Yan, Francisco J Salguero, Emily Heath, Jeffrey V Siebers. Evaluation of dose mapping errors via use of a volume-based dose mapping method. *AAPM 2012*, Charlotte, NC, USA
4. **Huixiao Chen**, David L Craft, David P Gierga. MCO-informed VMAT planning for prostate cancer. *AAPM 2012*, Charlotte, NC, USA
5. Brian A Winey, **Huixiao Chen**, Juliane Daartz, David P Gierga, John H Shin, J. Schwab, Kevin S Oh. Dosimetric effects of diaphragm motion on spine SBRT treatments. *AAPM 2013*, Indianapolis, USA
6. **Huixiao Chen**, Brian A Winey, Juliane Daartz, David P Gierga. Parameter sensitivity analysis of VMAT planning for Spine SBRT. *AAPM 2013*, Indianapolis, Indiana, USA
7. **Huixiao Chen**, Zhe Chen, Ravinder Nath, Fanqing Guo. Quality assurance of 4DCT process using ET gating system. *AAPM 2015*, Anaheim, CA, USA
8. **Huixiao Chen**, John Kim, David J Carlson, Jun Deng, Ravinder Nath, Zhe Chen. A simple predictor for V105 in breast tangential treatment planning. *AAPM 2017*, Denver, USA

9. **Huixiao Chen**, Fanqing Guo, David J. Carlson, Jun Deng, Ravinder Nath, Zhe Chen. Commissioning and potential clinical implementation and advantageous of 2.5MV photon beams for selected radiotherapy cases. *AAPM 2017*, Denver, USA
10. **Huixiao Chen**, Stephanie Winter, John H Kim, John Kim, Jacqueline R Kelly, Joseph N Contessa, Kenneth Roberts, Jun Deng, Zhe Chen. Efficiency gain and quality improvements for whole brain treatment planning with hippocampal sparing utilizing a shared RapidPLAN model. *AAPM 2018*, Nashville, TN, USA
11. Muhammed Shafiq Hassan, **Huixiao Chen**, James Bond, Denise Allen, Zhe Chen. Evaluation of a Commercial Tungsten Eye Shield for Orthovoltage beams using Gafchromic film. *AAPM 2020*, virtual meeting
12. **Huixiao Chen**, Kevin Morley, Ronnie Rodriguez, Emily Draeger, Muhammed Shafiq Hassan, Zhe Chen. A small footprint couch-top support device for image-guided radiotherapy of heavy patients. *AAPM 2020*, virtual meeting
13. **Huixiao Chen**, Lauren Tressel, John Kim, Dae Han, Fada Guan, Emily Draeger, Melissa Young, Kimberly Johung, Henry Park, Michael Owens, David J. Carlson, Zhe Chen. Management of patients with cardiac implantable electronic devices (CIEDs) on a new RefleXion treatment platform. *AAPM 2024*, Los Angeles, CA
14. **Huixiao Chen**, Minyoung Lee, Dae Han, Weili Zhong, Fada Guan, Emily Draeger, Zhe Chen, Dave J. Carlson, Blake Gaderlund, Ray Yang. Streamlined beam modeling of a New PET-guided RefleXion X1 Unit for Robust Small-Target and Off-Axis Plan Deliveries. *AAPM 2024*, Los Angeles, CA
15. **Huixiao Chen**, Zhe J. Chen, M. Surucu, N. Kovalchuk, B. Han, B. Cai, T. Banks, G. Bal, A. Maniyedath, David J. Carlson (Yale+Stanford+UTSW+RefleXion). Investigating the feasibility of treating five static tumors with biology guide radiotherapy (BgRT) using a single 18F-FDG injection. *AAPM 2024*, Los Angeles, CA
16. **Huixiao Chen**, Zhe J. Chen, Dae Han, Emily Draeger, Henry Park, Kimberly Johung, Melissa Young, Dan Longo, Vanessa Hill, Girish Bal, David J. Carlson. Investigating the feasibility of treating multiple moving tumors using a single 18F-FDG injection in biology guide radiotherapy (BgRT). *AAPM 2024*, Los Angeles, CA, USA
17. Emily Draeger, Lauren Tressel, Dae Yup Han, David J. Carlson, Zhe J. **Chen**, **Huixiao Chen**. Exploring the capabilities of the Reflexion X1 in the treatment of a large-field sarcoma. *AAPM 2024*, Los Angeles, CA
18. Measurements of Small Field Output Correction Factors on a RefleXion Machine. Weili Zhong¹, Zhe Chen, MinYoung Lee, Fada Guan, **Huixiao Chen**, Dae Yup Han. *AAPM 2024*, Los Angeles, CA
19. T. Watkins, C. Han, A. Liu, M. Surucu, N. Kovalchuk, B. Han, B. Cai, T. Banks, R. Lalonde, D. Dimitriadou, J. Chang, R.T. Forbang, N. Alois, **H. Chen**, D. Carlson, C. Zhe, L. Ku, S. Maganti, R. Yan (COH+Stanford+UTSW+Yale+RefleXion). Towards Reference Dataset for RefleXion X1 Beam Model. *AAPM 2024*, Los Angeles, CA
20. **Huixiao Chen**, Dae Han, Emily Draeger, Weili Zhong, Minyoung Li, Fada Guan, Daniel F. Hicks, Henry S. Park, Kimberly L. Johung, Melissa R. Young, Girish Bal, David J. Carlson, Zhe J. Chen. Evaluation of biology-guided radiotherapy (BgRT) in a motion phantom with real patient breathing patterns. *ASTRO 2024*, Washinton DC
21. Emily Draeger, **Huixiao Chen**, John Kim, Lauren Tressel, Daniel F Hicks, Qiong Liu, Chi Liu, Girish Bal, Henry S Park, Zhe J. Chen, David J Carlson. Evaluation of 18F-FDG and 18F-FMISO PET Imaging for Biologically Guided Radiotherapy in Lung and Abdomen Cancer Patients. *ASTRO 2024*, Washinton DC
22. Daniel F. Hicks, **Huixiao Chen**, John J. Kim, Lauren Tressel, David G. Wallington, Kelly Becht, Kimberly L. Johung, Melissa R. Young, Karine Feghali, Dorine de Jong, Zhe J. Chen, David J.

- Carlson, Henry S. Park. Impact of synthetic PET evaluation prior to PET-guided functional modeling in optimizing patient selection for biology-guided radiotherapy. ASTRO 2024, Washinton DC
23. Weili Zhong, Svetlana Kuznetsova, Lauren Tressel, John J. Kim, **Huixiao Chen**, Henry S. Park, David J. Carlson, Zhe (Jay) Chen. Assessment of Knowledge-Based Plan Optimization for a Clinical PET/CT-LINAC. ASTRO 2024, Washinton DC
 24. Henry S. Park, **Huixiao Chen**, Emily Draeger, John J. Kim, Lauren Tressel, Kimberly L. Johung¹, Melissa R. Young, Karine Feghali, Dorine de Jong, Zhe J. Chen, David J. Carlson. Workflow Description of the First-in-Human Multi-Target Multimodality Radiotherapy Treatment Utilizing Biology-Guided Radiotherapy. ESTRO 2025, Vienna, Austria
 25. **Huixiao Chen**, Lauren Tressel, John Kim, Minyoung Lee, You-Hsin Chang, Weili Zhong, Dae Yup Han, Emily A. Draeger, Svetlana Kuznetsova, Vanessa Hill, Daniel Longo, Ann-Teresa Jasman, Henry S. Park, Michael Burke, Adam Shulman, David J. Carlson, Zhe (Jay) Chen. Developing and Evaluating the First Pre-Treatment Physics Plan Checklist for Error Detection in Biology-Guided Radiotherapy (BgRT). AAPM 2025, Washington DC, USA
 26. **Huixiao Chen**, Ray Yang, Blake Gaderlund, Yiu-Hsin Chang, David J. Carlosn, Zhe (Jay) Chen. Characterizing and modeling higher-order motions of collimator subsystem on a 60RPM gantry Linac for improved small target dosimetry. AAPM 2025, Washington DC, USA
 27. Sameer Taneja, Minyoung Lee, Zhe (Jay) Chen, **Huixiao Chen**. Streamlining Orthovoltage QA: Feasibility of IC Profiler dosimetry and workflow optimization. AAPM 2025, Washington DC, USA
 28. **Huixiao Chen**, Henry S. Park, Dae Yup Han, Emily A. Draeger, Girish Bal, Zhe (jay) Chen, David J. Carlson. First phantom testing of Biology-guided radiotherapy for sequential integrated boost radiotherapy. AAPM 2025, Washington DC, USA
 29. Lichung Ku, **Huixiao Chen**, Tim Perez, Ethan Hartowicz, Ray Yang. 60RPM Rotational Winston Lutz Test to Characterize Operational MV-kV Offset on RefleXion X1 System. AAPM 2025, Washington DC, USA
 30. Huidong Xie, Girish Bal, Qiong Liu, Jun Hou, Tianqi Chen, **Huixiao Chen**, Henry Park, David J. Carlson, Chi Liu. Evaluating the Use of Diffusion-based Denoised PET image in BgRT. AAPM 2025, Washington DC, USA
 31. **Huixiao Chen**, Henry S. Park, Girish Bal, Lauren Tressel, Johnnn Kim, Emily Draeger, Dae Han, Vanessa Hill, Daniel Longo, Ann-Teresa Jasman, Michael Burke, Adam Shulman, Zhe (Jay) Chen, David J. Carlson. ¹⁸F-FDG PET image metric analysis of clinical patients treated using Biological-guided radiotherapy (BgRT). ASTRO 2025, San Francisco, USA
 32. Henry S. Park, **Huixiao Chen**, Emily Draeger, Lauren Tressel, John Kim, Kimberly Johung, Melissa Young, Karine Al Feghali, Dorine de jong, Zhe (jay) Chen, David J. Carlson. First-in-Human duo modality radiotherapy treatment in a single plan using Biogy-guided radiotherapy: A case report. ASTRO 2025, San Francisco, USA

Students and Physics Residents Teaching and Training Experience:

2017-present Supervision of clinical rotations of Linac, Surface Imaging, Orthovoltage machine, Special procedures including BGRT, SBRT, TBI, and TSET