Stanford

Serdar Charyyev

Clinical Assistant Professor, Radiation Oncology - Radiation Physics

Bio

ACADEMIC APPOINTMENTS

- Clinical Assistant Professor, Radiation Oncology - Radiation Physics

Teaching

COURSES

2023-24

- Medical Physics and Dosimetry: BMP 251, RADO 251 (Aut)
- Physics of Radiation Therapy: BMP 252, RADO 252 (Win)

Publications

PUBLICATIONS

- **A novel inverse algorithm to solve IPO-IMPT of proton FLASH therapy with sparse filters.** *International journal of radiation oncology, biology, physics*
  Harrison, N., Kang, M., Liu, R., Charyyev, S., Wahl, N., Liu, W., Zhou, J., Higgins, K. A., Simone, C. B., Bradley, J. D., Dynan, W. S., Lin, L.
  2023
- **MPLA case: I didn't realize those were the expectations!** *Journal of applied clinical medical physics*
  Simiele, S. J., Charyyev, S., Lin, L., Kim, L., Wang, D., Gronberg, M. P.
  2023: e14089
- **Measurement of the time structure of FLASH beams using prompt gamma rays and secondary neutrons as surrogates.** *Physics in medicine and biology*
  Charyyev, S., Liu, R., Yang, X., Zhou, J., Dhabaan, A., Dynan, W. S., Oancea, C., Lin, L.
  2023
- **Characterization of 250 MeV Protons from the Varian ProBeam PBS System for FLASH Radiation Therapy** *INTERNATIONAL JOURNAL OF PARTICLE THERAPY*
  Charyyev, S., Chang, C., Zhu, M., Lin, L., Langen, K., Dhabaan, A.
  2023
- **Characterization of 250 MeV Protons from the Varian ProBeam PBS System for FLASH Radiation Therapy.** *International journal of particle therapy*
  Charyyev, S., Chang, C. W., Zhu, M., Lin, L., Langen, K., Dhabaan, A.
  2023; 9 (4): 279-289
- **An Integrated Physical Optimization Framework for Proton Stereotactic Body Radiation Therapy FLASH Treatment Planning Allows Dose, Dose Rate, and Linear Energy Transfer Optimization Using Patient-Specific Ridge Filters.** *International journal of radiation oncology, biology, physics*
  Liu, R., Charyyev, S., Wahl, N., Liu, W., Kang, M., Zhou, J., Yang, X., Baltazar, F., Palkowitsch, M., Higgins, K., Dynan, W., Bradley, J., Lin, et al
  2023

- **A component method to delineate surgical spine implants for proton Monte Carlo dose calculation** *JOURNAL OF APPLIED CLINICAL MEDICAL PHYSICS*
  Chang, C., Charyyev, S., Harms, J., Slopsema, R., Wolf, J., Refai, D., Yoon, T., McDonald, M. W., Bradley, J. D., Leng, S., Zhou, J., Yang, X., Lin, et al
  2023; 24 (1): e13800
- **A potential revolution in cancer treatment: A topical review of FLASH radiotherapy** *JOURNAL OF APPLIED CLINICAL MEDICAL PHYSICS*
  Gao, Y., Liu, R., Chang, C., Charyyev, S., Zhou, J., Bradley, J. D., Liu, T., Yang, X.
  2022; 23 (10): e13790
- **Proton Radiography with FLASH Dose Rates**
  Stanforth, A., Charyyev, S., Arrue, J., Duce, M., Erickson, A., Dhabaan, A.
  WILEY.2022: E704
- **Measurement of the Time Structure of FLASH Irradiation Using Prompt Gamma Rays and Secondary Neutrons as Surrogates**
  Charyyev, S., Liu, R., Yang, X., Zhou, J., Dynan, W., Oancea, C., Lin, L.
  WILEY.2022: E569
- **Development of a Proton SBRT FLASH Treatment Technique with Dose, Dose Rate, and LET Optimization Using Patient Specific 3D Ridge Filters**
  Liu, R., Charyyev, S., Wahl, N., Liu, W., Zhou, J., Yang, X., Dynan, W., Kang, M., Higgins, K., Bradley, J., Lin, L.
  WILEY.2022: E429
- **Evaluation of Abdomen IMPT Treatments Using Deformed Treatment Planning CT Based On Pre-Treatment Cone-Beam CT**
  Charyyev, S., McDonald, M., Dhabaan, A.
  WILEY.2022: E329
- **A Practical Approach to Transmission and Dosimetric Leaf Gap Selectionfor Two Identical Linacs for Stereotactic Radiosurgery Treatments**
  Xie, H., Elder, E., Ghavidel, B., Charyyev, S., Liu, R., Liu, Y., Zhang, J., Luca, K., Godette, K., Yang, X., Liu, T., Roper, J.
  WILEY.2022: E783
- **An unsupervised patient-specific metal artifact reduction framework for proton therapy**
  Chang, C., Lei, Y., Charyyev, S., Leng, S., Yoon, T., Zhou, J., Yang, X., Lin, L., Linte, C. A., Siewerdsen, J. H.
  SPIE-INT SOC OPTICAL ENGINEERING.2022
- **Uncertainty in OSLD Dose Reading Due to CBCT-Based IGRT**
  Charyyev, S., Harms, J., Diamond, Z., Elder, E., Ghavidel, B., Axente, M.
  WILEY.2021
- **Feasibility of 3D Printed Ridge Filter to Enable SBRT FLASH Therapy Using Scanning Proton Beam**
  Liu, R., Charyyev, S., Zhou, J., Yang, X., Liu, T., McDonald, M., Higgins, K., Bradley, J., Lin, L.
  WILEY.2021
- **Influence of Loss Functions on Accuracy of Deep Learning Based Dose Distribution Prediction for Intensity Modulated Proton Radiation Therapy**
  Momin, S., Harms, J., Lei, Y., Charyyev, S., Zhou, J., Roper, J., Bradley, J., Liu, T., Yang, X.
  WILEY.2021
- **A Novel Component Method to Delineate Surgical Spine Implants for Proton Monte Carlo Dose Calculation**
  Chang, C., Charyyev, S., Harms, J., Slopsema, R., Wolf, J., Refai, D., Yoon, T., McDonald, M., Bradley, J., Leng, S., Zhou, J., Yang, X., Lin, et al
  WILEY.2021
- **A novel proton counting detector and method for the validation of tissue and implant material maps for Monte Carlo dose calculation** *PHYSICS IN MEDICINE AND BIOLOGY*
  Charyyev, S., Chang, C., Harms, J., Oancea, C., Yoon, S., Yang, X., Zhang, T., Zhou, J., Lin, L.
  2021; 66 (4): 045003
- **Learning-based synthetic dual energy CT imaging from single energy CT for stopping power ratio calculation in proton radiation therapy** *BRITISH JOURNAL OF RADIOLOGY*
  Charyyev, S., Wang, T., Lei, Y., Ghavidel, B., Beitler, J. J., McDonald, M., Curran, W. J., Liu, T., Zhou, J., Yang, X.
  2021; 95 (1129): 20210644
- **Synthetic Dual Energy CT Imaging from Single Energy CT Using Deep Attention Neural Network**
  Wang, T., Charyyev, S., Lei, Y., Ghavidel, B., Beitler, J. J., McDonald, M., Curran, W. J., Zhou, J., Liu, T., Yang, X., Bosmans, H., Zhao, W., Yu, et al

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- **Accurate characterization of metal implants and human materials using novel proton counting detector for Monte Carlo dose calculation in proton therapy**
  Charyyev, S., Chang, C., Harms, J., Oancea, C., Yoon, S., Yang, X., Zhang, T., Zhou, J., Leng, S., Lin, L., Bosmans, H., Zhao, W., Yu, et al
  SPIE-INT SOC OPTICAL ENGINEERING.2021

- **Measurements of LET, Nuclear Halo, Energy and Angular Spectra of a Proton Spot Scanning Beam with a Hybrid Semiconductor Detector**
  Charyyev, S., Chang, C., Stanforth, A., Harms, J., Oancea, C., Lin, L.
  WILEY.2020: E470

- **Voxel-Specific Characterization of An Anthropomorphic Phantom as the Ultimate Ground Truth to Evaluate the Accuracy of Various Imaging Methods of Proton Therapy**
  Chang, C., Harms, J., Charyyev, S., Zhou, J., Yang, X., Lin, L.
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- **Fast Monte Carlo Dose Estimation for Proton Therapy Using a Dual-Pyramid Deep Learning Framework**
  Harms, J., Lei, Y., Charyyev, S., Stanforth, A., Zhou, J., Lin, L., Curran, W., Liu, T., Yang, X.
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- **Derivation of Photon Cross Section Coefficients of Virtual Monoenergetic CT Images for Radiotherapy Treatment Planning**
  Harms, J., Chang, C., Charyyev, S., Zhou, J., Yang, X., Lin, L.
  WILEY.2020: E599

- **Synthetic Dual Energy CT Images From Single Energy CT Image for Proton Radiotherapy**
  Charyyev, S., Wang, T., Lei, Y., Ghavidel, B., Beitler, J., McDonald, M., Curran, W., Liu, T., Zhou, J., Yang, X.
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- **Deep Learning Augmented Proton Portal Imaging: A Phantom Study**
  Charyyev, S., Lei, Y., Harms, J., Eaton, B., McDonald, M., Curran, W., Liu, T., Zhou, J., Zhang, R., Yang, X.
  WILEY.2020: E417

- **Optimization of hexagonal-pattern minibeams for spatially fractionated radiotherapy using proton beam scanning** *MEDICAL PHYSICS*
  Charyyev, S., Artz, M., Szalkowski, G., Chang Chih-Wei, Stanforth, A., Lin Liyong, Zhang Rongxiao, Wang, C.
  2020; 47 (8): 3485-3495

- **High quality proton portal imaging using deep learning for proton radiation therapy: a phantom study** *BIOMEDICAL PHYSICS & ENGINEERING EXPRESS*
  Charyyev, S., Lei, Y., Harms, J., Eaton, B., McDonald, M., Curran, W. J., Liu, T., Zhou, J., Zhang, R., Yang, X.
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- **ASSESSMENT OF AMBIENT NEUTRON DOSE EQUIVALENT IN SPATIALLY FRACTIONATED RADIOTHERAPY WITH PROTONS USING PHYSICAL COLLIMATORS** *RADIATION PROTECTION DOSIMETRY*
  Charyyev, S., Wang, C.
  2020; 189 (2): 190-197

- **About Secondary Neutrons in Spatially Fractionated Radiation Therapy with Protons**
  Charyyev, S., Wang, C.
  WILEY.2019: E590

- **Development of Proton Minibeams as New Form of GRID Radiotherapy**
  Charyyev, S., Wang, C., Szalkowski, G.
  WILEY.2018: E488

- **Monte Carlo Study of Photon Minibeams**
  Szalkowski, G., Wang, C., Charyyev, S.
  WILEY.2018: E614