

Presentation for the
AAPM 2021 Virtual Meeting

MEDICAL PHYSICS
The International Journal of Medical Physics
Research and Practice
An Overview of Contents & Submissions

Presented by

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Editor-In-Chief **MEDICAL PHYSICS**

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Editor (Therapy) **MEDICAL PHYSICS**

MEDICAL PHYSICS

The International Journal of Medical Physics Research and Practice

Stanley Benedict, PhD

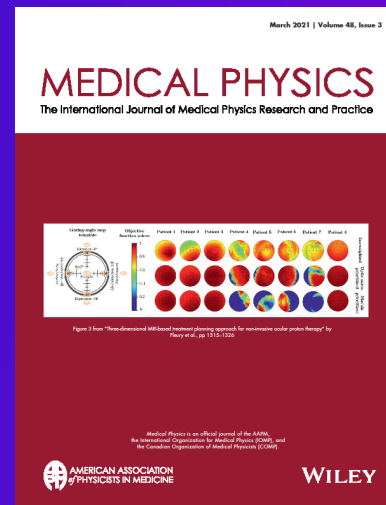
Disclosures Relevant to this Presentation

1. **MEDICAL PHYSICS:** Editor (Therapy), Stipend
2. Board of Directors:
 - American Association of Physicists in Medicine (AAPM)
 - Radiosurgery Society (RSS)
3. NIH Funding: U10 Program; UC Davis CCC/NCTN
4. Book Royalties:
 - (CRC Press: Stereotactic Radiosurgery and Stereotactic Body Radiation therapy)
 - (Springer Publishing AG: Handbook of Image-Guided Brachytherapy)
5. UC Davis Radiation Oncology has research agreements with Elekta, Accuray, Mim Software, VisionRT, RaySearch, & Sun Nuclear

MEDICAL PHYSICS: An Overview of Contents & Submissions

Topics in this Presentation:

1. MANUSCRIPT TYPES
2. SECTION HEADINGS
3. TAXONOMY FOR SUBMISSION/DE SELECTION
4. POLICY ON ARTICLE SUBMISSIONS
5. ITHENTICATE – ADDRESSING PLAGIARISM
6. DATA SHARING
7. VIDEO ABSTRACTS



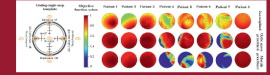
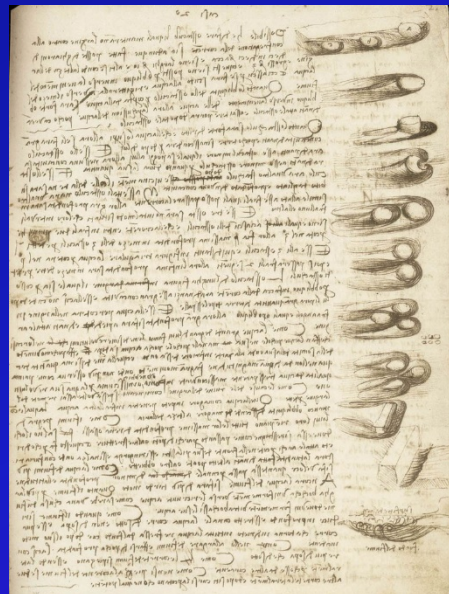


Figure 1. Color calibration chart used for color accuracy in the manuscript.

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MANUSCRIPT TYPES

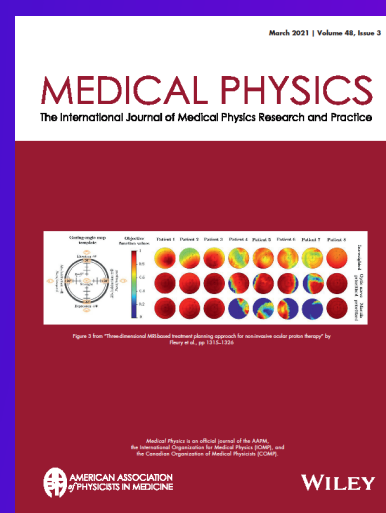


MEDICAL PHYSICS: MANUSCRIPT TYPES

- Research Articles
- Technical Notes
- Review Articles
- Scientific Reports (Task Groups)
- Editorials

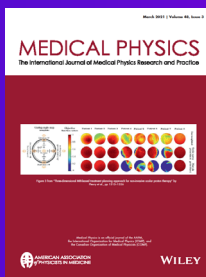
Generally, **Research Articles** articulate and validate a scientific hypothesis. **Technical Notes** describe new scientific instruments, computational tools, or processes but need not be hypothesis-driven.

A **Technical Note** is a concise description of a specific development, procedure or device which should be a solution to a specific problem and have sufficient relevance to be useful to many readers of *Medical Physics*.



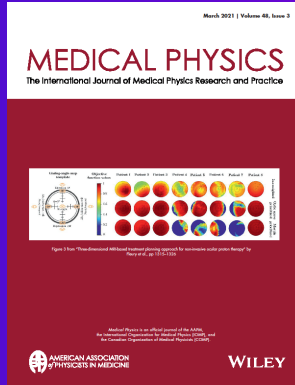
MEDICAL PHYSICS: MANUSCRIPT TYPES

- Letters: A **Medical Physics Letter (MPL)** is a short article on a scientific or clinical topic of overriding importance to medical physicists. An MPL does not preclude publication of a regular research article at a later time, provided the latter is a substantial expansion of the former. The typeset journal page limit for Medical Physics Letters is 5 printed pages.
-
- Research articles: A **Research Article** is a report of original experimental or theoretical research. Attention to clarity and conciseness facilitates the review process and also the impact of the published article. Research articles must include novel medical physics scientific or technical content or broadly applicable clinical physics innovations. The typeset journal page limit for Research Articles is 10 printed pages.
-
- Technical note: A **Technical Note** is a concise description of a specific development, procedure or device which should be a solution to a specific problem and have sufficient relevance to be useful to many readers of *Medical Physics*. Authors must insert the words "Technical Note: . . ." at the beginning of their title. The typeset journal page limit for Technical Notes is 5 printed pages.



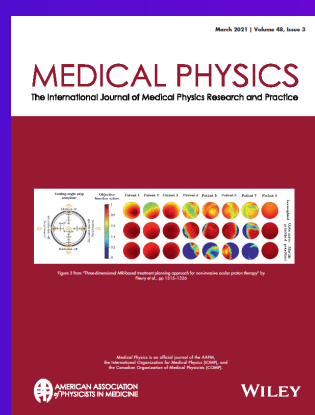
MEDICAL PHYSICS

TABLE OF CONTENTS: 6 SECTION HEADINGS



MEDICAL PHYSICS: 6 SECTION HEADINGS

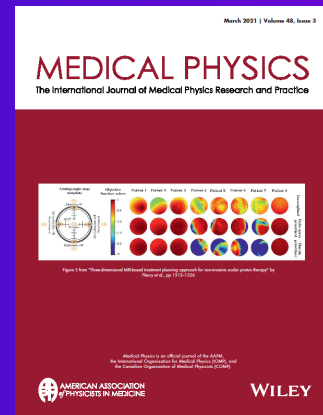
- I. THERAPEUTIC INTERVENTIONS
- II. DIAGNOSTIC IMAGING (IONIZING AND NONIONIZING)
- III. QUANTITATIVE IMAGING AND IMAGE PROCESSING
- IV. EMERGING IMAGING AND THERAPY MODALITIES
- V. COMPUTATIONAL AND EXPERIMENTAL DOSIMETRY
- VI. BIOLOGICAL PHYSICS AND RESPONSE PREDICTION



MEDICAL PHYSICS:

I. THERAPEUTIC INTERVENTIONS

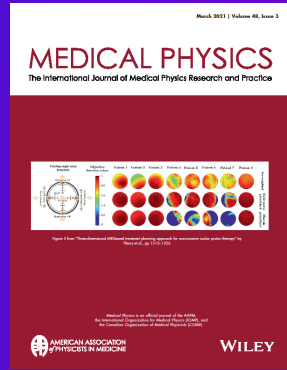
- Research and development for all radiation therapy, animal treatments, image-guided surgery, thermal therapy, endovascular interventions, radiopharmaceutical therapy modalities in current clinical use
- Device development, QA/QC, image guidance, motion management, IMRT planning, virtual clinical trials
- Therapy-related health physics, safety, and error mitigation



MEDICAL PHYSICS:

II. DIAGNOSTIC IMAGING (IONIZING AND NONIONIZING)

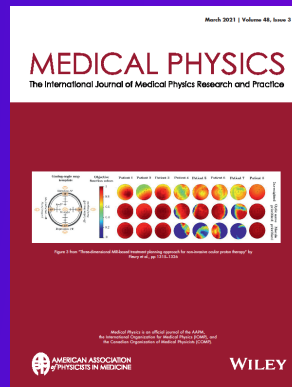
- Imaging research for ionizing radiation (CT, x-ray, charged particle, *etc.*, PET, SPECT) and nonionizing (US, MRI, electrical impedance, optical) modalities in current clinical use
- Image quality, QC, detector development, and image reconstruction
- Observer studies and methodologies, virtual clinical trials
- Small animal and histopathology
- Diagnostic imaging-related health physics, safety, and error mitigation



MEDICAL PHYSICS:

III. QUANTITATIVE IMAGING AND IMAGE PROCESSING

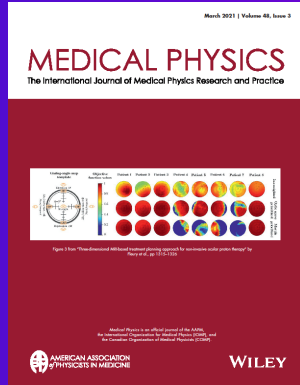
- Postacquisition image processing, image restoration and enhancement
- Secondary feature extraction
- Radiomics and biomarkers
- Segmentation, rigid and deformable image registration
- CAD/Quantitative imaging, decision support, staging, treatment response/prognosis/risk prediction
- Imaging research that is neither therapeutic nor diagnostic



MEDICAL PHYSICS:

IV. EMERGING IMAGING AND THERAPY MODALITIES

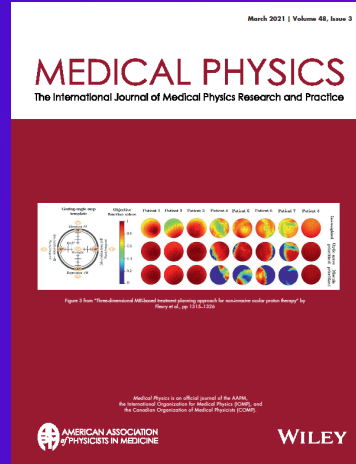
- Emerging diagnostic (e.g., microwave, x-ray phase contrast) or treatment modalities that have not yet been translated into clinical use (e.g., microbeam and nanoparticle-mediated therapies)
- Testing and/or experimental clinical evaluation of emerging modalities or combinations of existing modalities



MEDICAL PHYSICS:

V. COMPUTATIONAL AND EXPERIMENTAL DOSIMETRY

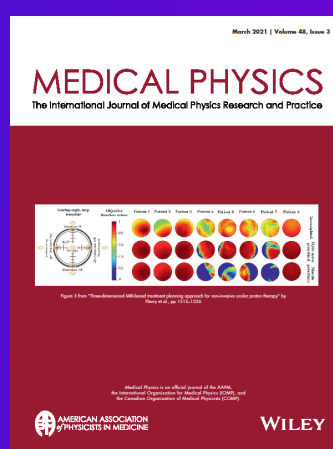
- Monte Carlo, deterministic algorithm and dosimeter development and measurements, for both ionizing and nonionizing radiation



MEDICAL PHYSICS:

VI. BIOLOGICAL PHYSICS AND RESPONSE PREDICTION

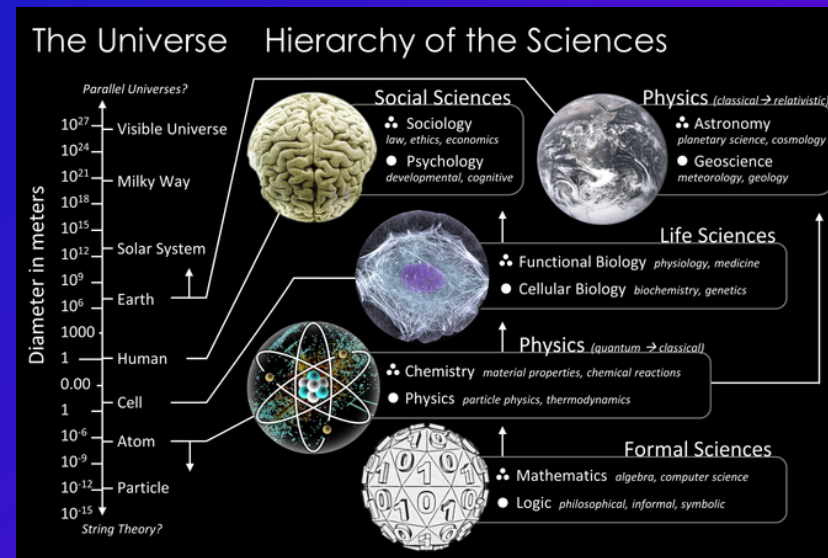
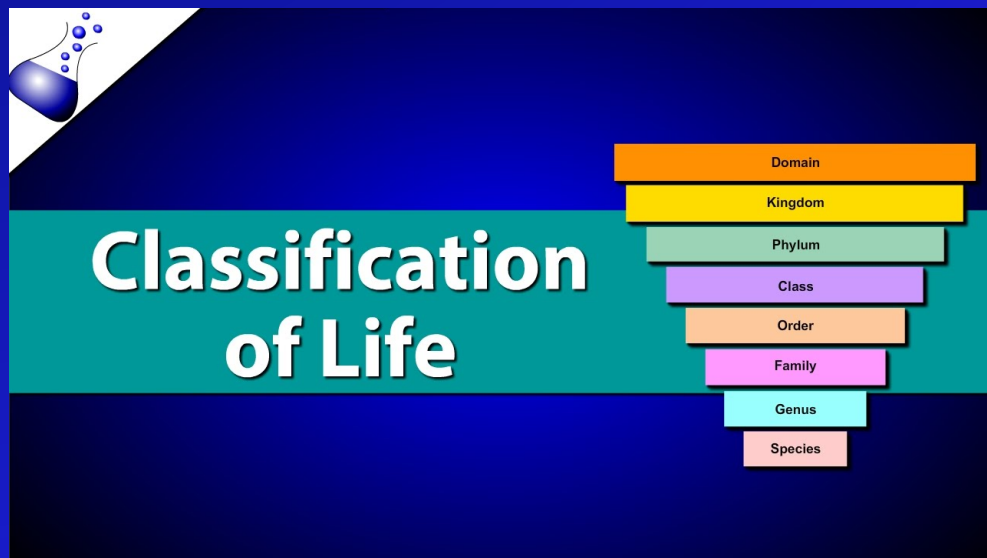
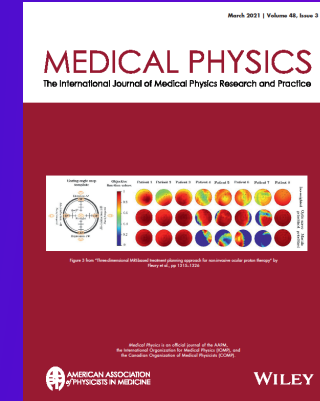
- Radiation exposure risk analysis
- Outcome and response prediction (LQ, TCP)
- Tissue and cell models; microscopy
- Molecular and radiation biology • Physiology and biophysics



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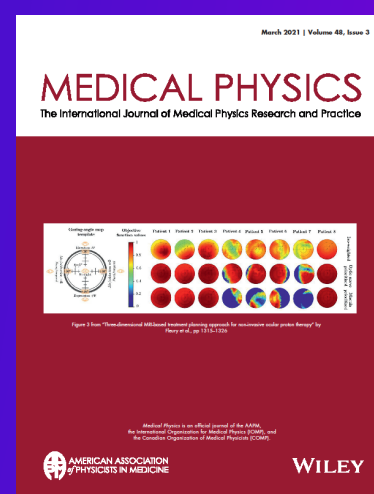
TAXONOMIES:

SELECTING EDITORIAL EXPERTISE (IMAGING AND/OR THERAPY)



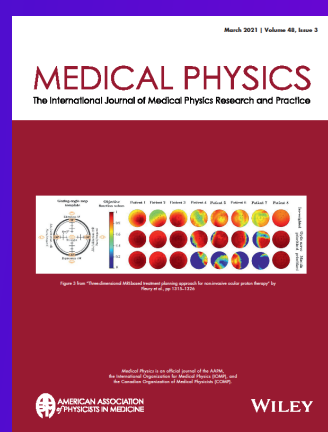
MEDICAL PHYSICS: TAXONOMY I (IM)

- 1 - IM- X-ray
- 2 - IM- Breast x-ray Imaging
- 3 - IM- CT
- 4 - IM- MRI
- 5 - IM- PET
- 6 - IM- SPECT
- 7 - IM- Nuclear Medicine General
- 8 - IM- Ultrasound
- 9 - IM- Multi-modality imaging systems
- 10 - IM- Optical
- 11 - IM- Other imaging modalities



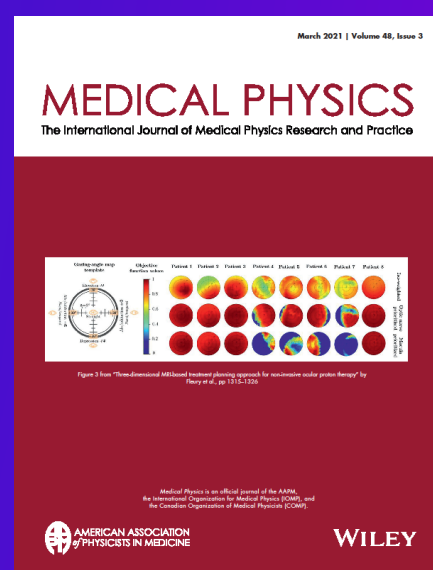
MEDICAL PHYSICS: TAXONOMY II (IM/TH)

- 12 - IM/TH- Cone Beam CT
- 13 - IM/TH- Informatics
- 14 - IM/TH- Image Analysis Skills (broad expertise across imaging modalities)
- 15 - IM/TH- Mathematical/Statistical Foundational skills
- 16 - IM/TH- Radiation Transport
- 17 - IM/TH- Image registration techniques
- 18 - IM/TH- image segmentation techniques



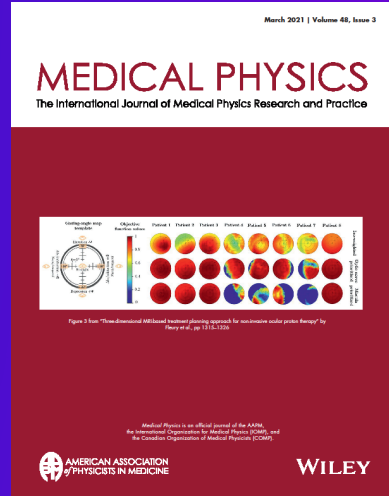
MEDICAL PHYSICS: TAXONOMY III (IM/TH)

- 19 - IM/TH- Image-guided surgery
- 20 - IM/TH- Radiopharmaceutical therapy
- 21 - IM/TH- MRI in Radiation Therapy
- 22 - IM/TH- Formal quality management tools



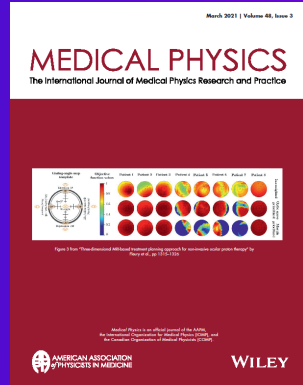
MEDICAL PHYSICS: TAXONOMY IV (TH)

- 23 - TH- Brachytherapy
- 24 - TH- Radiation dose measurement devices
- 25 - TH- External beam- electrons
- 26 - TH- External beam- photons
- 27 - TH- External Beam- Particle/high LET therapy
- 28 - TH- Radiobiology(RBio)/Biology(Bio)
- 29 - TH- response assessment
- 30 - TH- Small Animal RT
- 31 - TH- Non-ionizing radiation therapies



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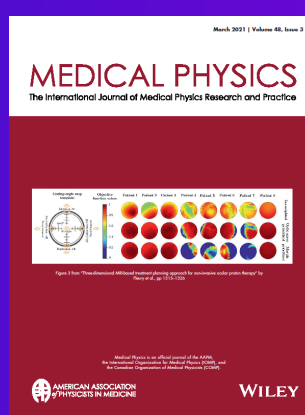
EXPECTATIONS AND POLICY FOR MEDICAL PHYSICS ARTICLES



MEDICAL PHYSICS: POLICY I

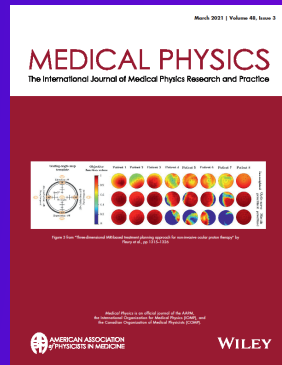
- *Medical Physics* articles must describe a novel research study that uses medical physics research methodologies to address an important issue in treatment or diagnosis of disease
- The focus can be either improving efficacy of current medical technology or basic research that enables new or emerging modalities
- In addition to novelty, *Medical Physics* articles should contain generalizable scientific data or conclusions and should be of interest to a defined subset of our readership.

<https://doi.org/10.1118/1.4939059>



MEDICAL PHYSICS: POLICY II

- *Medical Physics* articles must make an original contribution to the literature or to clinical practice. Such articles include the following:
- novel basic scientific developments with potential for improving patient care;
- clinical translation and validation of previously published scientific innovations;
- high-impact clinical physics innovations addressing a significant problem of broad interest to our readership.



MEDICAL PHYSICS: POLICY III

- Articles that address a narrow clinical physics problem, e.g., evaluation of a specific quality-assurance commercial product, are likely not suitable for Medical Physics and should be submitted to more clinically oriented physics venues, e.g., our sister publication,

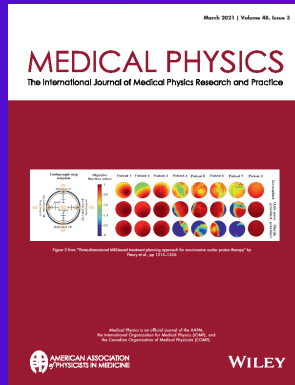
Journal of Applied Clinical Medical Physics.

<https://doi.org/10.1118/1.4939059>

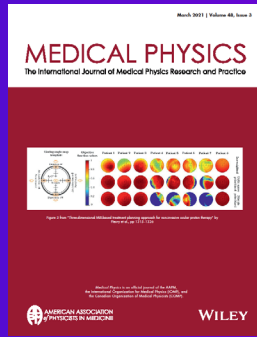


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ITHENTICATE: Plagiarism detection software

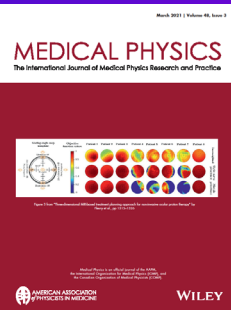


MEDICAL PHYSICS: ITHENTICATE



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MEDICAL PHYSICS: ITHENTICATE



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ABSTRACT

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PAGE: 1 OF 9 Text-Only Report

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DATA SHARING

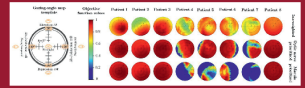
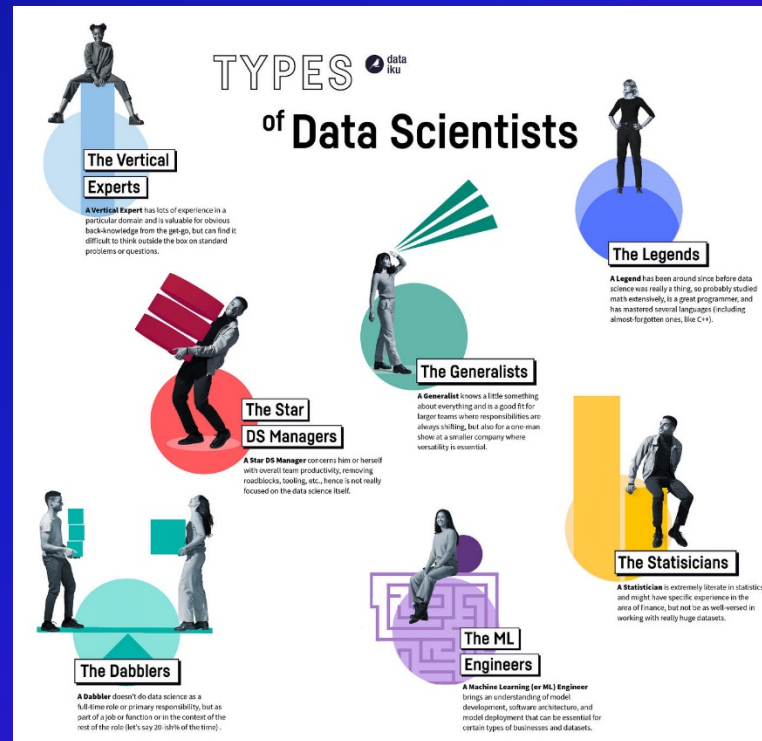


Figure 1 from "Three-dimensional differential thermal dosimetry approach for microwave probe therapy" by Hwang et al., pp. 17-21, 2020

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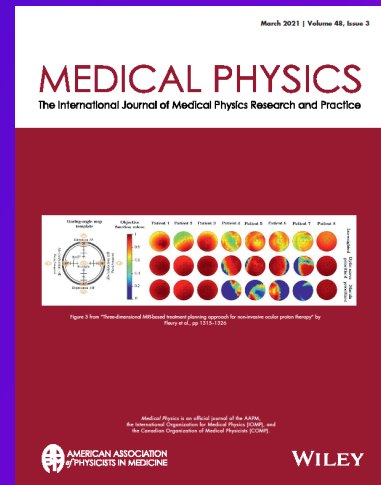


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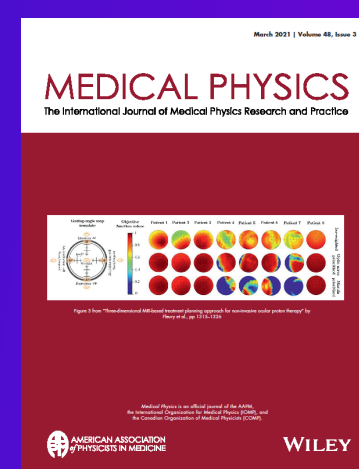
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- Options include:
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 - Unable to share
 - Share upon request to corresponding author
 - Data in supplemental file published w/ article
 - Data available on an online repository (Github, Zenodo, Dataverse, etc.)



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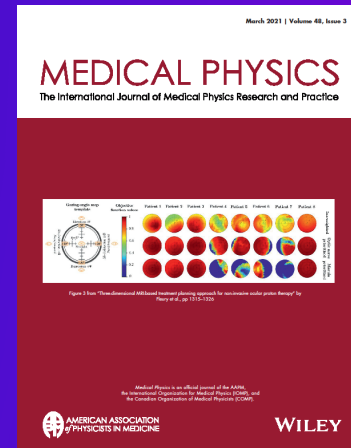
VIDEO ABSTRACTS



MEDICAL PHYSICS: VIDEO ABSTRACTS

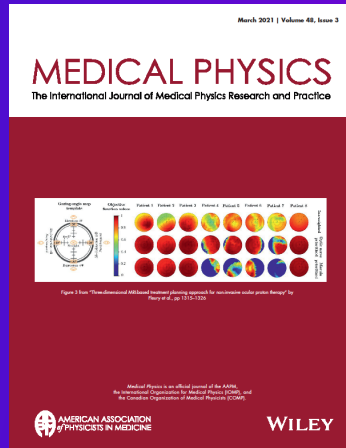
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MEDICAL PHYSICS: VIDEO ABSTRACTS

- Sample Video Abstract.....
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