CURRICULUM VITAE

EDUCATION

Education:	Institution	Date (year)	Degree	Major
Graduate or	Duke University	1990	PhD	Engineering
Professional	Duke University	1987	MS	Engineering
School				
Undergraduate	Indian Institute of Technology	1985	BS	Engineering

PROFESSIONAL EXPERIENCE

Positions held:

Institution	Position/Title	Dates
Dept. of Radiation Oncology Univ. of North Carolina, Chapel Hill	Professor Director of Physics	9/14 - present
Medical Physics Journal	Therapy Physics Editor	1/14 – 12/20
Dept. of Radiation Oncology Duke University Medical Center	Professor	2/09 – 9/14
Duke Graduate Medical Physics Program Duke University Medical Center	Faculty	1/06 – 9/14
Dept. of Radiation Oncology Duke University Medical Center	Associate Professor	5/01 – 2/09
Dept. of Radiation Oncology, Duke University Medical Center	Assistant Research Professor	8/95 – 5/01
Dept. of Radiation Oncology, Duke University Medical Center	Research Associate, Radiation Physics Section	8/93 – 8/95
Dept. of Radiation Oncology, Duke University Medical Center	Research Associate, Hyperthermia Section	8/91 – 8/95
School of Engineering, Duke University	Visiting Assistant Professor	8/90 – 8/91

HONORS

2018 AAPM fellow

2012 Gordon G. Hammes Faculty Teaching Award, Duke University School of Medicine.
"The Hammes award is intended to recognize continuing excellence in teaching and mentoring, and exemplary commitment to the education of graduate students within Basic Science Departments and Graduate Training Programs of the School of Medicine. The nominees and winners are selected by a graduate student committee." (taken from the duke website: http://medschool.duke.edu/faculty/office-faculty-development/annual-faculty-awards#Hammes). For a list of winners over the years, see: http://medschool.duke.edu/sites/medschool.duke.edu/files/facdev/Hammes%20Previous%20Winners_2.pdf.

2012 Teacher of the year award (Duke Graduate Medical Physics Program), selected by students in the Medical Physics Graduate Program.

2011 Teacher of the year award (Duke Graduate Medical Physics Program), selected by students in the Medical Physics Graduate Program.

2011 Director's award for exemplary service (Duke Graduate Medical Physics Program), awarded by the Director for service on committees,

2010 Teacher of the year award (Duke Graduate Medical Physics Program), selected by students in the Medical Physics Graduate Program.

2009 Teacher of the year award (Duke Graduate Medical Physics Program), selected by students in the Medical Physics Graduate Program.

2009 Excellence in mentorship award (Duke Graduate Medical Physics Program), selected by students in the Medical Physics Graduate Program.
2008 Teacher of the year award (Duke Graduate Medical Physics Program), selected by students in the Medical Physics Graduate Program.

2007 Teacher of the year award (Duke Graduate Medical Physics Program), selected by students in the Medical Physics Graduate Program.

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1. Refereed publications:

1. Mowery, YM, Vergalasova, I, Rushing, CN, Choudhury, KR, Niedzwiecki, D, Wu, QJ, Yoo, DS, Das, SK, Wong, TZ, Brizel, DM, "Early 18FDG-PET Response During Head and Neck Cancer Radiotherapy May Predict Disease Recurrence", Int J. Radiat. Oncol. Biol. Phys. 2020; 108: 969-976.

2. El Naqa, I, Das, SK, "The Role of Machine and Deep Learning in Modern Medical Physics", Med. Phys. 2020; 47: e125-e126.

3. Hammers, JE, Pirozzi, S, Lindsay, D, Kaidar-Person, O, Tan, XM, Chen, RC, Das, SK, Mavroidis, P, "Evaluation of a Commercial DIR Platform for Contour Propogation in Prostate Cancer Patients Treated with IMRT/VMAT", Journal of Applied Clinical Medical Physics 2020; 21: 14-25

4. Lu, L, Chen, Y, Shen, C, Lian, J, Das, SK, Marks, L, Lin, WL, Zhu, T, "Initial Assessment of 3D Magnetic Resonance Fingerprinting (MRF) towards Quantitative Brain Imaging for Radiation Therapy", Medical Physics 2020; 47: 1199-1214.

5. Das, SK, McGurk, R, Miften, M, Mutic, S, Bowsher, J, Bayouth, J, Erdi, Y, Mawlawi, O, Boellaard, R, Bowen, SR, Xing, L, Bradley, J, Schoder, H, Yin FF, Sullivan, DC, Kinahan, P, "Task Group 174 Report: Utilization of [18F]Fluorodeoxyglucose Positron Emission Tomography ([18F]FDG-PET) in Radiation Therapy", Med. Phys. 2019; 46: e706 – e725.

6. Yoon, WS, Das, SK, Marks, LB, "The Impact of Set-Up Uncertainty on Dose-Response Estimates", Int J. Radiat. Oncol. Biol. Phys. 2019; 105: 477-478.

7. Mullins, BT, McGurk, R, McLeod, RW, Lindsay, D, Amos, A, Gu, D, Chera, BS, Marks, L, Das, S, Mazur, L, "Human Error Bowtie Analysis to Enhance Patient Safety in Radiation Oncology", Practical Radiation Oncology 2019; 9: 465-478.

8. Pillai, M, Adapa, K, Das, SK, Mazur, L, Dooley, J, Marks, LB, Thompson, RF, Chera, BS, "Using Artificial Intelligence to Improve the Quality and Safety of Radiation Therapy", Journal of the American College of Radiology 2019; 16: 1267-1272.

9. Rankine, LJ, Wang, ZY, Driehuys, B, Marks, LB, Kelsey, CR, Das, SK, "Correlation of Regional Lung Ventilation and Gas Transfer to Red Blood Cells: Implications for Functional-Avoidance Radiation Therapy Planning", Int. J. Radiat. Oncol. Biol. Phys. 2018; 101: 1113-1122.

10. Jaffray, DA, Das, SK, Jacobs, PM, Jeraj, R, Lambin, P, "How Advances in Imaging Will Affect Precision Radiation Oncology", Int. J. Radiat. Oncol. Biol. Phys. 2018; 101: 292-298.

11. Mavroidis, P, Grimm, J, Cengiz, M, Das, SK, Tan, X, Yazici, G, Ozyigit, G, "Fitting NTCP Models to SBRT

Dose and Carotid Blowout Syndrome Data", Med. Phys. 2018; 45: 4754-4762.

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13. Mavroidis, P, Pearlstein, KA, Dooley, J, Sun, J, Saripalli, S, Das, SK, Wang, AZ, Chen, RC, "Fitting NTCP Models to Bladder Doses and Acute Urinary Symptoms During Post-Prostatecomy Radiotherapy", Radiat. Oncol. 2018; 17: doi: 10.1186/s13014-018-0961-x

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TEACHING ACTIVITIES

Duke University Graduate Medical Physics Seminars:

Commissioning a small field biological irradiator using point, 2D and 3D techniques, 2011.

Optimization in intensity modulated radiation therapy, 2009.

Function in radiotherapy, 2006.

Duke University/UNC Medical Physics Resident Instruction:

Treatment planning.

Linear accelerator commissioning and QA.

Duke University Graduate Medical Physics Program:

MP 722: Advanced Photon Beam Radiation Therapy (a full semester class, taught every year 2006-2014).

Duke University/UNC Dosimetrists training:

Intensity modulated radiation therapy planning for head-and-neck, prostate, GI/GU cancers.

Duke University Postdoctoral students mentored:

Kung-shan Cheng

Vladimir Stakhursky

Yu Yuan

Amar Chawla

Thesis/Dissertation mentor for MS/PhD students in Duke Graduate Medical Physics Program (2006 – 2014):

NAME	DEGREE	YEAR GRADUATED	Thesis/Dissertation title
Alex Price	MS	2015	Developing a Quality Index for Dose-Volume Histograms Based on Physician Preference
Kyle Higgins	MS	2015	Response Assessment and Prediction in Esophageal Cancer Patients via F-18 FDG PET/CT Scans
Gen Joo Lee	MS	2015	Knowledge-Based Radiation Therapy Database Optimization on Head and Neck Cancer
Shelby Grzetic	MS	2014	Multi-Case Knowledge-Based IMRT Treatment Planning in Head and Neck Cancer

Ross McGurk	PhD	2013	Consensus Segmentation for Positron Emission Tomography: Development and Applications in Radiation Therapy
Leith Rankine	MS	2013	The Effects of PET Reconstruction Parameters on Radiotherapy Response Assessment and an Investigation of SUV - peak Sampling Parameters
Dong Joo Rhee	MS	2013	The Need for Adaptive Intensity Modulated Radiotherapy Replanning in Head-and-Neck Patients with Anatomical Changes During Treatment
Matthew Schmidt	MS	2013	Knowledge-Based IMRT Treatment Planning for Bilateral Head and Neck Cancer
Christopher Busselberg	MS	2012	Knowledge Based Radiation Therapy with Three Dimensional Registration of the Planning Target Volume
Yi Hsuan Chung	MS	2012	Treatment-Induced Dosimetric/Volumetric Changes During the Course of Radiotherapy for Lung Cancer
Deon Dick	MS	2012	Knowledge-Based IMRT Treatment Planning for Prostate Cancer: Experience with 101 cases from Duke Clinic
David Good	MS	2012	Inter-Institution Application of Knowledge-based IMRT Treatment Planning
Vorakarn Chanyavanich	PhD	2011	Knowledge-based IMRT Treatment Planning for Prostate Cancer
Jessica Salazar	MS	2011	Optimization of RapidArc for Head-and-Neck Radiotherapy
Matthew Freeman	MS	2010	Weighted mutual information for assessment of treatment plan quality for prostate cancer.
Nagabindu Vulli	MS	2009	Effect of fluence map smoothness on the deliverability of head-and-neck IMRT plans designed on a commercial planning system

Sana Ahmed	MS	2007	Determining volumetric and dosimetric accuracy of MRI based IMRT treatment plan for patients with prostate, brain and head and neck cancer
Michael Lyon	MS	2007	Verification of delivered dose using an optimally shifted dose subtraction methodology

GRANTS

External support – gifts, grants, and contracts:

Agency	Title	Amount	Period
Wallace H. Coulter Translational Partners Research Program	Knowledge-based optimization of radiation treatment planning for prostate cancer Role: co-Principal Investigator Purpose: To use past radiotherapy treatment plans to automatically optimize plans for new patients. Effort: 10%	$125, 000	4/1/09 – 3/31/10
Wallace H. Coulter Translational Partners Research Program	Knowledge-based optimization of radiation treatment planning for prostate cancer Role: co-Principal Investigator Purpose: To use past radiotherapy treatment plans to automatically optimize plans for new patients. Effort: 10%	$125, 000	4/1/08 – 3/31/09
NCI 1R01 CA115748-01A1	Accurate Prediction of Cardiac and Lung Radiation Injury. Role: Principal Investigator Purpose: To create models to predict radiotherapy-induced lung pneumonitis and cardiac perfusion defects. Effort: 54%	$932,464	4/1/06 – 3/30/11
NCI P01 CA042745-19	Hyperthermia and Perfusion Effects in Cancer Therapy. (PI: M. Dewhirst) Project 2: Real time modeling & control using finite elements & MRI. Role: Project Director Purpose: To control and thermal therapy focus under MR guidance. Effort: 9%	$1,216,749	7/1/05 – 6/30/10

Varian Medical Systems	Incorporation of functional Image-guidance in Radiotherapy planning. Role: Prinicipal Investigator Purpose: To use SPECT guidance to steer the dose in incidentally irradiated normal lung away from high functioning regions, in patients with thoracic cancers treated using radiotherapy. Effort: 20% unpaid	$150,000	5/1/05 – 4/30/08
Varian Medical Systems	Orientation Optimization for Intensity Modulated Radiotherapy. Role: Principal Investigator Purpose: To select external beam radiotherapy orientations to optimize tumor coverage and critical structure sparing. Effort: 20% unpaid	$100,000	4/01/03 – 3/31/05
NCI R01CA68519	Unified approach to hyperthermia modeling and planning. Role: Investigator Purpose: To model electromagnetic thermal therapy for cancer treatment. Effort: 20%	$1,318,455	12/01/99 - 12/01/03
NCI R01CA68519-03	Unified approach to hyperthermia modeling and planning. Role: Investigator Purpose: To model electromagnetic thermal therapy for cancer treatment. Effort: 20%	$837,939	09/01/96 - 08/31/99
Whitaker Foundation	Patient Treatment Planning for Ultrasound Induced Hyperthermia Using the Finite Element Method. Role: Principal Investigator Purpose: To model and predict ultrasound heating for cancer therapy. Effort: 50%	$180,000	01/01/94 - 12/31/96

PROFESSIONAL SERVICE

Committee and administrative responsibilities:

Director of Physics, Department of Radiation Oncology, University of North Carolina (Sept. 2014 – present):
Oversee all aspects of Medical Physics clinical and research activities across the system.

Therapy Physics Editor, *Medical Physics* Journal (1/2014 – 12/2021).
I was one of 3 editors; the other editors were Jeffrey Williamson (Editor-in-Chief) and Mitch Goodsitt (Imaging Physics Editor). *Medical Physics* is the premier international journal in the field of medical physics.
By virtue of being an Editor, I was also member/chair of the following committees/subcommittees:
Board of Associate Editors (Chair)
Medical Physics Editorial Board (Vice-Chair)
WG4 Outreach to Related Communities (Co-Chair)
Journals Business Management Committee (Member)
Medical Physics Dataset Article Subcommittee (Member)
Medical Physics Marketing Subcommittee (Member)
Review Article Subcommittee (Member)
Scientific Integrity Subcommittee (Member)
WG1 Improving review process efficiency, quality and selectivity (Member)
WG2 Improving the reader experience by enhancing accessibility and readability, and marketing impact of journal (Member)

Member, AAPM Medical Physics 3.0 Committee; Chair of Smart Tools subcommittee (2018 – present).
The charge of this committee: To integrate MP 3.0 activities to enact, express, and enhance the full value of physics towards human health into the council working space of the AAPM. That includes practice, administrative, scientific, and educational goals. To identify and explore other areas besides radiotherapy and imaging where medical physicists can work in healthcare.

Member, AAPM Biological Effect Subcommittee (2007 – present).
This subcommittee is charged with investigating radiation-induced biological effects in small animals and humans.

Member, AAPM working group on Biological Effects of Hypofractionated Radiotherapy/SBRT (2013 – present).
This effort will provide recommendations on safe dose limits to healthy organs during the course of hypofractionated radiation therapy. This effort is critical since hypofractionated radiation therapy is rapidly being adopted in clinical practice. Specifically, I am a member of the following subcommittees:
Unit No. 1 Tumor Control Probability (2013 – present).
Unit No. 2 Normal Tissue Complication Probability (2013 – present).
Unit No. 3 Radiobiology (2013 – present).

Unit No. 5 Reporting Standards (2013 – present).
Unit No. 7 Tumor Control Probability H and N (2013 – present).
Unit No. 8 Tumor Control Probability Thoracic (2013 – present).
Unit No. 13 Normal Tissue Complication Probability H and N (2013 – present).
Unit No. 14 Normal Tissue Complication Probability Thoracic (2013 – present).

Member, AAPM working group on Conformal Small Animal Irradiation Devices (2013 – 2014).
This effort is involved with advancing the field of preclinical small animal imaging and irradiation, with a view to effectively testing sophisticated radiation treatment strategies.

Member, AAPM Work Group on Coordination of Medical Physics Residency Programs (2013 – 2014).
This work group is in the process of setting up uniform standards for Medical Physics Residency Programs.

Member, RSNA Quantitative Imaging Biomarkers Alliance (2012 – present).
This international effort is involved with setting up standards for the use of imaging biomarkers in clinical trials and clinical practice.

Member, QUANTEC - Quantitative Analysis of Normal Tissue Effects in the Clinic (2008 - 2010).
This international effort summarized dose/volume/outcome data for various normal organs, and recommended normal tissue radiation dose/volume limits to help guide the safe clincal practice of radiation therapy. These guidelines were published in the International Journal of Radiation Oncology Biology Physics and also summarized in Radiotherapy and Oncology (the leading radiation oncology journal in Europe).

Duke University Information Technology Advisory Council (2010).
This committee set the standards for information technology within Duke University.

Member, AAPM task group 211: Classification, Advantages and Limitations of the Auto-segmentation approaches for PET (2010 – 2017).
This effort is charged with providing guidelines on the delineation of lesion boundaries in PET using auto-segmentation techniques.

Chair, AAPM task group 174: Utilization of 18F-Fluorodeoxyglucose Positron Emission Tomography (FDG-PET) in Radiation Therapy (2008 – 2019).
This effort is charged with setting up guidelines and recommendations for the safe and consistent utilization of FDG-PET in clinical practice, specifically in the context of radiation therapy.

Member, Duke Graduate Medical Physics Administrative Committee (2009 – 2012).
This committee guided the workings of the entire Medical Physics Graduate program.

Member, Duke Graduate Medical Physics Admissions Committee (2008 – 2014).

This committee examined all applications and graded applicants for final selection.

Associate Director, Duke Radiation Physics Residency Program (2008 – 2014).
Coordinated the residency rotations and educational requirements.

Co-chair, Duke Graduate Medical Physics Qualifying Exam Committee (2006 – 2014).
This committee wrote and graded the exam that determined whether students were qualified enough to continue with their graduate studies.

Physics/Engineering Councilor, North American Hyperthermia Society (2001-2003, 2004 – 2006).
Coordinated all physics related activities.

Reviewer experience:

- Journals:
  - Therapy Physics Editor, *Medical Physics* journal (2014 -).
  - Internal reviewer for Quantitative Analyses of Normal Tissue Effects in the clinic (QUANTEC) (2008 – 2009).
  - Reviewer for Medical Physics, International Journal of Radiation Oncology Biology Physics, Practical Radiation Oncology, Physics in Medicine and Biology, IEEE TBME, International Journal of Hyperthermia (1995 -).

- Grants:
  - Center for Medical Countermeasures against Radiological Terrorism (CMCRT) reviewer, Medical College of Wisconsin (2008).

- CAMPEP Medical Physics Residency:
  - Reviewed Texas Oncology, Dallas, TX (2013).
  - Reviewed Vassar Brothers program, Poughkeepsie, NY (2012).
  - Reviewed Wayne State University program, Detroit, MI (2011).