

Curriculum Vitae | March 16, 2017

Samuel B. French

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EDUCATION

- PhD (candidacy) Biophysics, University at Buffalo, State University of New York
Optimization methods of radiation treatments using multi-leaf collimation, with Daryl Nazareth
- MS Department of Physics
SD School of Mines and Technology
Thesis: "Monte Carlo Simulations of Nanotubes in Suspension," with Michael Foygel
- MS Department of Biophysics
University at Buffalo – State University of New York
Thesis: "An Augmented Reality Based Patient Positioning System With Application To Breast Radiotherapy," with Daryl Nazareth
- BS Physics, (*m. Mathematics*)
SD School of Mines and Technology
Project: Technical Report: "Cross Diode Multiplexers in NMR Transceivers"

CERTIFICATION

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| State of New York, Limited Medical Physics Permit | 2013 |
| American Board of Radiology: Part I | 2013 |

PROFESSIONAL AFFILIATIONS

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| American Association of Physicists in Medicine | 2012 – Present |
| Upstate New York Association of Physicists in Medicine | 2012 – Present |

PROFESSIONAL EXPERIENCE

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| Roswell Park Cancer Institute | 2013 – Present |
| Composites and Polymer Engineering Laboratory | 2010 – 2012 |
| MEMSense LLC | 2008 – 2010 |

ROSWELL PARK CANCER INSTITUTE: QA ACTIVITIES

ROUTINE QUALITY ASSURANCE

Linac QA, One machine per month since 05/2013 (≈ 45 times for QA below)
MACHINES: TrueBeam STx, Varian Trilogy, Varian 21EX, Varian 21EX- δ :

- Output, energy ratios, diodes
- Radiation lightfield agreement
- Collimator, independent jaw size
- IMRT/VMAT QA (picket fence and modified PF for VMAT, T2/T3 tests)
- EPID collection of monthly QA images
- Flatness and symmetry with diode array

Orthovoltage monthly QA (\approx 12 times)

- Output, diodes
- Safety checks

TG-51, TG-40, TG-142 Linac Annual Measurements

- Clinac 21EX- δ ; Olean, NY; 10/2013
- TrueBeam STX (/w electrons, 10 energies total), Buffalo, NY, 4/2014
- Clinac 21EX- δ ; Olean, NY; 10/2014
- Siemens Primus; Cornell University, Ithaca, NY; 04/2015
- Varian Trilogy; Buffalo, NY; 4/2015
- Varian Trilogy; Buffalo, NY, 11/2015
- Clinac 21EX; Buffalo, NY; 12/2016

Brachytherapy QA

Nucletron microSelectron HDR

- Morning warmup for Cylinders, T&O, endobronchial, or other sites \approx 40 times per year since 2013
- Safety checks and film position check
- IORT HDR setup in operating room (\approx 3 per year)
- Transfer Tube (catheter) QA

PATIENT QA

- IMRT/VMAT QA rotation, one week per month; all IMRT/VMAT verification planning and delivery for that week (\approx 325 per year)
- Gamma Knife Patient liaison to Diagnostic Radiology, coordinate patients with MRI, CT, angiography
- Installation of fiducial stereotactic space device: MRI, CT
- Patient positioning for MRI and CT
- QA of fiducials and resultant images

GAMMAKNIFE, MONTHLY AND DAILY QA

- Morning warmup, safety checks, sector activation, TPS verification
- daily CBCT QA, monthly CBCT QA

OTHER QA OR DEPARTMENT ACTIVITIES

RPC/IROC External auditing

- OSLD phantom setup and output for linacs. 2013–2016
- TLD phantom setup, dose calcs, delivery 2013–2016

OTHER

Internal workgroup, main technical consultant, VMAT patient transfer from HD120 MLC to Millennium MLC equipped linacs

ROSWELL PARK, RESEARCH ACTIVITIES

- Optimization of radiation therapy plans using IMRT and VMAT techniques using Monte Carlo dose calculations (BEAM)
- Study of augmented reality technologies in patient positioning of deformable anatomy
- Adaptation of high-definition MLC to Millennium MLC
- Optimizing high-performance computing for MC dose calculations

VARIOUS BIOMEDICAL MATERIALS INVESTIGATIONS, CAPE LAB

- Computer modeling (ABAQUS FEM) of flexoelectric based ceramic/thermoplastic composite materials
- Impact performance studies of composite foam/fiber/thermoset systems with applications to protective materials systems
- Nanofiber production, nylon and polyvinyl alcohol fibers, El Marco NS-500 (NASA EPSCoR, PI: Edward Duke, SDSM&T)

CODING AND RELATED SKILLS

Languages:	Python, C, Fortran, MATLAB
Commercial FEM/BEM:	L ^A T _E X, Corel Draw, Adobe Photoshop, MS Office
Other Computing:	Unix/Linux, Windows, Mac OS

PREVIOUSLY FUNDED BIOMEDICAL RESEARCH

2008, Samuel French, Principal Investigator

Division of Industrial Innovation and Partnerships (IIP-NSF), Award #0741195

“STTR Phase I: Application of an Electrostatic Actuator Stable-range-of-motion Enhancement Control Law to Improve MEMS Gyroscopic Sensors”, Award \$149,865

2007, Samuel French – Investigator, with James Brunsch (PI) and Robert Dean

Division of Industrial Innovation and Partnerships (IIP-NSF), Award #0712339

“STTR Phase I: High Permittivity Packaging to Enhance MEMS Gyroscopic Sensors”, \$149,974

PUBLICATIONS

JOURNAL ARTICLES

M. Foygel, D. Anez S. French R. D. Morris and V. L. Sobolev. *Theoretical and computational studies of carbon nanotube composites and suspensions: Electrical and thermal conductivity*. Physical Review: B, B71:104201–1 – 104201–8, 2005.

PROCEEDINGS AND PRESENTATIONS

D Nazareth, H Malhotra , S French , K Hoffmann , C Merrow, An Augmented-Reality Optical Imaging System for Accurate Breast Positioning During Radiotherapy, 56th Annual Meeting of the American Association of Physicists in Medicine, July 20-24, 2014, Austin, TX.

D. Salem L. Kjerengtroen S. French T. Ducheneaux, M. J. Robinson. *Impact performance of composite sandwich structures with aluminum foam cores*. SAMPE, SAMPE 2013 Long Beach, CA, USA, MAY 6–9 2013.

(Scheduled) S French, M Podgorsak , S Bhagroo ,J Zielan ,D Nazareth, Adapting High-Definition MLC VMAT Plans to the Millennium MLC for Single-Fraction Treatment Without Re-Optimization, AAPM Spring Clinical Meeting, New Orleans, LA, March 18, 2017.

S French, M Bellow , D Nazareth, Optimized Parallel Monte Carlo Dose Calculations for Secondary MU Checks, 58th Annual Meeting of the American Association of Physicists in Medicine, August 2nd, 2016, Washington DC (Oral Presentaion as part of "Innovations in Dose Calculations").

Samuel B. French, Michael Bellow, Daryl P. Nazareth *Optimized Monte Carlo dose calculations for use in evaluation of VMAT planning*. Upstate New York Association of Physicists in Medicine 2016 Spring Meeting, Buffalo Clinical and Translational Research Center, Buffalo, NY, 13 June 2016.

S. French, and D. P. Nazareth *Utilizing Monte Carlo dose calculations in secondary optimization of volumetric modulated arc therapy plans*. Meeting of the Upstate New York Chapter of the AAPM, Rochester, NY, Jan 24th, 2016.

S. French, and M. B. Podgorsak *Estimating the lifetime of Boronated shielding materials in radiation therapy settings*. Meeting of the Upstate New York Chapter of the AAPM, Buffalo, NY, May 20th, 2015.

K. Hoffman, S. French, H.K. Malhotra and D.P. Nazareth. *A patient positioning system using an augmented-reality display and self calibrating camera for breast radiotherapy.* Meeting of the Upstate New York Chapter of the AAPM, Rochester, NY, November 13th, 2013.

S. French, Percolation Processes and Modeling of Critical Onset of Conductivity in Nanotube Composites, contributing speaker to the South Dakota Academy of Sciences, 88th annual meeting, SDSM&T, Rapid City, SD, April 4, 2003.

REFERENCES

These persons are familiar with
my professional qualifications and my character:

Dr. Matthew Podgoršak, PhD, FAAPM, DABR
Chief of Medical Physics
Associate Professor of Medical Physics, Supervisor
Dept. of Radiation Oncology
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Dr. Steven Rudin PhD, FAAPM, DABR
Director, Division of Radiation Physics
Director, UB Medical Physics Program
UB-Toshiba Stroke and Vascular Research Center
University at Buffalo (SUNY)
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Dr. Daryl Nazareth, Ph.D., DABR
(Thesis Advisor)
Assistant Professor of Medical Physics
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