

# SPECIAL SEMINAR

## Dodging the Artifacts in Post-Operative CT Images

By Martin J Murphy, PhD  
Department of Radiation Oncology  
Virginia Commonwealth University, Richmond, VA

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Time: 11:00 am - 12:00 pm

Location: Princess Margaret Hospital, 610 University Avenue, 6<sup>th</sup> Floor, Room 6-604

There are a number of surgical procedures that involve the implantation of metal hardware with high precision. Two examples are the placement of electrodes in the brain for Deep Brain Stimulation (DBS) and the implantation of pedicle screws in the vertebrae for spine stabilization. For the case of DBS, the target is only 1 – 2 mm in size, while for pedicle screw placement, mis-positioning could puncture the spinal cord. It would be highly desirable to obtain post-implant CT images immediately after surgery to verify the positioning of the hardware, but metal artifacts occlude the view. At VCU we have developed a technique of projection-to-volume registration of a pre-operative CT scan and a set of post-operative cone-beam CT projection images to avoid the metal artifacts entirely, thus giving a clear and precise picture of the position of metal hardware in the anatomy.

### BIOGRAPHY



Dr. Murphy received his PhD in physics from the University of Chicago. Following research posts in nuclear physics, astrophysics, and space science at UC/Berkeley, the University of Washington, and the Lockheed Palo Alto Research Laboratory, he joined the CyberKnife development team at Stanford University, where he developed the image guidance and tracking system. In 2003 he moved to Virginia Commonwealth University, where he pursues research in image registration and guidance for radiotherapy and surgical applications.