

Prof. W.J. van der Putten

1980 M.Sc.(Eng) Applied Physics, Eindhoven University of Technology
1987 Ph.D. Bio-Physics, Trinity College Dublin

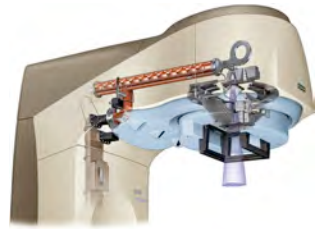
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Research Cluster and Interests: Medical Physics

Dosimetry of ionizing radiation in diagnostic radiology is of considerable interest as this contributes by far the largest amount of dose due to man-made radiation to the overall population. Patient dosimetry is under investigation in studies where we are attempting to estimate the total population radiation dose in a region due to diagnostic x-ray investigations. In addition we have commenced research in the use of Formal Risk Assessment in Radiology using quantitative parameters such as Quality Adjusted Life Years (QALY). Radiation Dose cannot be seen in isolation from image quality and we are currently investigating methods of optimizing digital imaging systems using novel filter combinations.

We have an interest in the use of information technology in health care and several projects in this area are under way. As part of the research in Monte-Carlo calculations in Radiotherapy, we are extending this concept to radio-biology where we are looking at predicting the biological response of tissue in modern Image Guided radiotherapy. Finally, we have been successful (in collaboration with Digital Enterprise Research Institute at NUI Galway) to attract a substantial grant to investigate the potential of semantic web technology to facilitate communications between different electronic patient information systems.



The close proximity of a teaching hospital (University Hospital Galway) and the National University of Ireland, Galway makes collaboration between the Medical Physics Research Cluster and the Hospital relatively easy. Galway is unique in this respect. In addition, we have a close relationship with the National Centre for Bio-Medical Engineering Science. All this makes possible a wide range of different clinical research projects over and above those described above. Examples : Functional imaging in MRI (with Dept. of Psychiatry), measuring effectiveness of wound healing and miscellaneous projects in radiotherapy and radiology.

Selected Recent Publications:

- S.Gundy, W.van der Putten, A.Shearer, D.Buckton, A.G.Ryder, M.Ball (2004) The use of chloroaluminium phthalocyanine tetrasulfonate (AlPcTS) for time-delayed fluorescence imaging. *Phys. Med. Biol.* Vol. 49 359-369
- S.Gundy, W.van der Putten, A.Shearer, D.Buckton, A.G.Ryder (2004) Determination of the modulation transfer function (MTF) for a time-gated fluorescence imaging system *Journal of Biomedical Optics.* Vol.9 1206-1213
- B.O'Brien, W.J. van der Putten (2008) Quantification of Risk Benefit in interventional radiology. *J. Rad. Protection* Vol. 129(1-3) 59-62
- T O'Shea, M.J.Foley, D.Rajasekar, P.A.Downes, W. van der Putten, M Moore, A Shearer (2008) Electron Beam Therapy at extended SSD: a Monte Carlo investigation. *J. Appl. Clin. Med. Physics* Vol. 9 (4), 57-67