

Prof. Dr. Thomas Haberer

Scientific Curriculum

Dr. Haberer has devoted his scientific work to the interdisciplinary field of tumour therapy using relativistic ion beams. In 1989 he joined the biophysics department of the German Heavy Ion Research Center (GSI, Darmstadt, Germany) as a Ph.D. student. The title of his Ph.D. thesis (University of Heidelberg) was: *Development of a magnetic beam delivery system for tumour-conformal dose application with heavy charged particles*. Aiming at the full clinical exploitation of the advantageous properties of ion beams Dr. Haberer has developed the central physical-technical innovation in the field, a fully active ion beam delivery system, the rasterscan technique. Using this system the distribution of the clinically extremely effective stopping ions can be tailored to the tumour region only while sparing the healthy tissue to maximum extent. The rasterscan system was developed into a clinically applicable treatment modality and after having passed detailed approval procedures including an international safety review board it is being used to treat extremely complex skull base tumours using scanned carbon ion beams world wide first. Being appointed physical-technical therapy programme director he was responsible for the patient treatments that started at GSI in 1997. From 1997 to 2008 more than 400 patients were successfully treated at GSI. Simultaneously to the first patient treatments at GSI he worked on the design of the world wide first hospital based combined proton-ion-facility being based on scanning beam dose delivery only, the Heidelberg Ion Beam Therapy Center (HIT). At HIT an optimized linac-synchrotron particle accelerator-combination generates libraries of energy-, focus- and intensity-variable pencil-beams for the dose-delivering scanning systems at various fixbeam treatment stations. In addition, the world-wide first scanning ion gantry is presently under commissioning at HIT. In 2005 Dr. Haberer was appointed scientific-technical director of the Heidelberg Ion Beam Therapy Center. HIT opened for patient treatments in 2009 and more than 700 patients were treated using proton or carbon ion beams. HIT offers excellent research and development options as a fully equipped experimental environment is integrated. While treating a large number of patients at HIT an R+D-programme was started to further push the limits in the field of ion therapy. In 2008 he was entitled Professor within the physics faculty of the Johann Wolfgang Goethe-University, Frankfurt. In 2010 Dr. Haberer was appointed Adjunct Fellow at the Frankfurt Institute of Advanced Studies. Dr. Haberer and co-authors have published a relevant amount of papers in the field and have filed a variety of patents.