GSI - **SEMINAR**

Im Seitenraum Hörsaal , SB1 1.201
Darmstadt, Planckstraße 1

Donnerstag, den 5. November 2015, 15:00 Uhr

Prof. Dr. Christian Karger

German Cancer Research Center (DKFZ)
Heidelberg

"Carbon ions for tumor Therapy: the biological response of tumors and normal tissues"

The physical properties of ions given by the “Bragg-Curve” make them a promising tool for radiotherapy, which aims at delivering a high dose to the tumor while sparing the surrounding organs at risk. While this is the case for protons as well as for heavier ions, heavy ions additionally show an increased biological effectiveness at the end of the ion range, which may be used to increase the effect in the tumor. Although first applications of heavy ion therapy date back to the 1950ies at the Berkley-Lab, interest increased dramatically after start of the Heavy Ion Therapy pilot project at GSI in 1998. In this project, the intensity-controlled rasterscanning technique and the local effect model, both developed at GSI, was applied clinically for the first time in patients and within a collaboration of GSI, German Cancer Research Center (DKFZ), University Clinic Heidelberg and Helmholtz Center Rossendorf, 440 patients were treated, mainly for skull base tumors. During this time, the Heidelberg Ion Therapy Center (HIT) has been build up and since then more than 2500 patients (end of 2014) have been treated with protons and carbon ions using the same technology. Additional ion therapy centers are in clinical operation in Japan, Italy and shortly also in Marburg.
The talk starts with an overview on heavy ion therapy at GSI and HIT and focusses then on the biological effectiveness of heavy ions. As the effectiveness depends of the differential effects in tumor and normal tissue, biological experiments in normal and tumor tissue will be discussed in the clinical context.

Einladender: Prof. Dr. Gerhard Kraft

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