

# GSI - SEMINAR

Im Theorieseminarraum, SB3 Raum 3.170a

Darmstadt, Planckstraße 1

Donnerstag, den 12. Februar 2015, 15:00 Uhr

**Dr. Walter Tinganelli**  
GSI Darmstadt

## ***"Hypoxic tumors in charged particle therapy"***

In many solid advanced tumors it is common to have regions with oxygen lack or with low oxygen concentration. These regions are resistant to chemotherapy and radiotherapy. It is well known that hypoxic cells have an increased oxygen enhancement ratio (OER).

Using heavy ions rather than conventional X-Rays is possible to reduce this oxygen enhancement.

Many studies were performed with X-Rays at different oxygenation conditions and experiments were done with heavy nuclei for normoxic and anoxic conditions (0% oxygen). However, nothing has been done, before our experiments, in the region called physioxia, with intermediate region of oxygen concentration, most important in tumor therapy.

Hypoxic regions are also a perfect niche for cancer stem cells or tumor initiating cells (CSC-TIC). Those cells are known to be responsible for tumor recurrence and formation.

In this talk we will show a complete survival dataset of Chinese Hamster Ovary (CHO) cells exposed to different ions in normoxic (21% oxygen), anoxic (0% oxygen) and hypoxic condition (0.15% 0.5% 2% oxygen). This dataset has been used for the verification of a semi-empirical model that predicts OER in function of LET and oxygen concentration and will suggest a new adaptive treatment plan that will take in to account the different oxygenations inside a tumor.

Einladender: Gerhard Kraft

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