

FAKULTÄT für PHYSIK  
LUDWIG-MAXIMILIANS-UNIVERSITÄT  
MÜNCHEN/GARCHING

PHYSIK-DEPARTMENT  
TECHNISCHE UNIVERSITÄT MÜNCHEN  
MÜNCHEN/GARCHING

## MLL-KOLLOQUIUM

Donnerstag, 18.10.2012, 16<sup>15</sup> Uhr

Hörsaal der LMU in Garching, Am Coulombwall 1  
Treffen zum gemeinsamen Kaffee 16 Uhr

**Prof. Katia Parodi**

LMU, Garching/ previously Heidelberg Ion Beam Therapy Center

### **Ion beam therapy: from the basic principles to the clinical implementation**

The application of ion beams (protons up to carbon ions) to external beam radiation therapy is rapidly increasing worldwide. The main rationale is the favorable energy loss of swift ions in matter, resulting in a characteristic dose maximum - the Bragg peak - at an adjustable position in depth. Hence, three-dimensional superimposition of several Bragg-peaks can enable superior conformation of the dose delivered to the tumor with better sparing of surrounding healthy tissue in comparison to conventional radiation. Ions heavier than protons can additionally offer superior biological effectiveness for improved treatment of those tumors which are resistant to conventional radiation. This talk will review the physical and biological fundamentals of ion beam therapy, as well as the main aspects of technical and clinical implementation with special focus on the Heidelberg Ion Beam Therapy Center. Moreover, it will outline open areas of medical physics research aiming to enable optimal clinical usage of this advanced yet not too widespread therapeutic modality.

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