



# 平成26年度 《第9回》 重粒子線 医工連携セミナー

平成27年2月20日（金）17:00～

場所：群馬大学重粒子線医学センター カンファレンス室

---

---

## Ion Spectroscopy studies with Timepix detectors

Giulia Arico, Ph.D.

Division of Medical Physics in Radiation Oncology  
University Clinic Heidelberg/  
German Cancer Research Center (DKFZ)

---

---

Ion radiotherapy offer advantages over conventional radiotherapy. However, ion beams may undergo fragmentation processes along their path in matter (e.g. beam line components and patient tissues). The purpose of our research is to provide a deeper knowledge on ion fragmentation processes, to improve the accuracy of the radiotherapy treatments.

Pixelated semiconductor detectors (Timepix) [Llopart et al. NIM A 581, 2007] are used for single particle measurements. Fragment species arising in helium and carbon ion beams crossing different materials are quantified, and the lateral particle distributions analysed.

Fragmentation processes occurring in water and in PMMA phantoms with the same water equivalent thicknesses are compared. This study shows some limits in the equivalence of these two materials, especially with increasing the target thicknesses.

Moreover, the influence of four circular brass collimators on the beam quality is investigated: secondary particles are recorded beyond the testing collimators, for different detector positions. This analysis, complemented by further data, can be used to increase the accuracy on the delivered dose calculations.

= 共催 =



がんプロフェッショナル養成基盤推進プラン  
放射線治療人材養成8大学連携プログラム

博士課程教育リーディングプログラム  
群馬大学 重粒子線医工学グローバルリーダー養成プログラム

= お問い合わせ先 =

群馬大学重粒子線医学研究センター 猪爪 (E-mail:inoino@gunma-u.ac.jp)  
〒371-8511 群馬県前橋市昭和町3-39-22 TEL: 027-220-8378