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Investigation of ion acceleration mechanism through laser-matter interaction in femtosecond domain

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An experimental campaign aiming to investigate the ion acceleration mechanism through laser-matter interaction in femtosecond domain has been carried out at the ILIL facility with a laser intensity of $2E19$ W/cm².

A combination of detectors were used to measure the properties of accelerated light ions, including a Thomson Parabola (TP), CR-39 detectors and Radiochromic films (RCF) to identify different ion species and measure cut-off energy.

We will present the main experimental data and will discuss the correlation between TP, CR-39 and data which give us confidence in measuring cut-off energy and estimate the total number of ions obtained shot-by shot.

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