# Laser-driven ion acceleration with a liquid sheet at high repetition rate at the CLPU (Preliminary results)

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Laser-driven ion acceleration is attractive for a large range of science areas, from fundamental science to medicine. Up to now, solid targets are mostly used in many experiments. Their density, simplicity of fabrication and ability to produce high-quality ion beams using TNSA acceleration mechanism make them appealing from laser-driven ion acceleration. However, after the interaction the target is destroyed and realignment of a new one is mandatory. Moreover, the debris from the interaction could damage the surrounding optics and detectors. A large effort has been made to develop high-repetition-rate (HRR) targets: cryogenic ribbons [1], water droplets [2], liquid crystal films [3] or even gas-jet targets [4,5]. These targets can regenerate *in situ* and could be a clean source of protons, free of contaminants and could operate at HRR. However, an effort of research and development is needed to understand, test and optimized such HRR targets.

In this work, we use a versatile quasi-planar water target from the collision of two equal diameter and velocity liquid microjets. Up to now, 2 MeV proton energy with an ethylene glycol sheet target was reported [6]. Here, we report proton acceleration up to 4 MeV from the interaction of the VEGA II laser with the water sheet target at high repetition rate.

## References

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