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## Simulations study of compact and tunable active-plasma lens system for witness extraction and driver removal

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Plasma based technology will allow an unprecedented reduction of the size of accelerating machine. Both fundamental research and applied science and technology will take profit of this feature.

The same compactness is required downstream the accelerator module, where the plasma-accelerated beams usually experience a large angular divergences growth after the acceleration. Here compact, strong and tunable focusing devices are needed.

Active plasma lenses have been demonstrated to be a compact and affordable tool to generate radially symmetric magnetic fields several orders of magnitude larger than conventional quadrupoles and solenoids. In this contribution we will investigate the opportunity of using active plasma lenses and metallic collimators to catch and transport the witness bunch while removing the driver. Beam dynamics and particle-matter interaction simulations will be presented.

**Primary authors:** DEL DOTTO, Alessio (INFN /LNF); CHIADRONI, Enrica (LNF); FERRARIO, Massimo (LNF); IOVINE, Pasqualina (INFN Napoli); MASULLO, Maria Rosaria (NA); POMPILI, Riccardo (LNF)

**Presenter:** DEL DOTTO, Alessio (INFN /LNF)

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