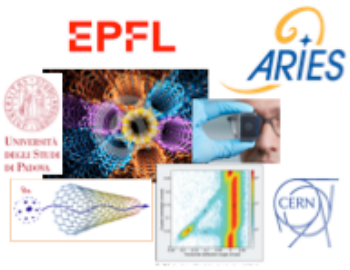

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Numerical investigation of beam-driven wakefields in hollow plasma channels modelled with carbon ions

Wednesday 11 March 2020 11:30 (30 minutes)

Hollow plasma channels can be modelled as shells of heavy ions, populated by pre-ionised electrons. Although this model does not take into account the crystalline structure of a solid, hence neglecting the properties emerging from such structure, it is adopted here as a simplistic approximation of a carbon nanotube (CNT). This approach allows for the investigation of beam–driven wakefields using conventional particle-in-cell (PIC) codes. Simulation results for a single hollow-plasma-channel show how such wakefields are affected by the hollow plasma radius and wall thickness. Moreover, wakefield excitation in an array of hollow plasma channels is investigated. In this case, the effect of changing the spacing between consecutive hollow plasma channels is also evaluated.

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