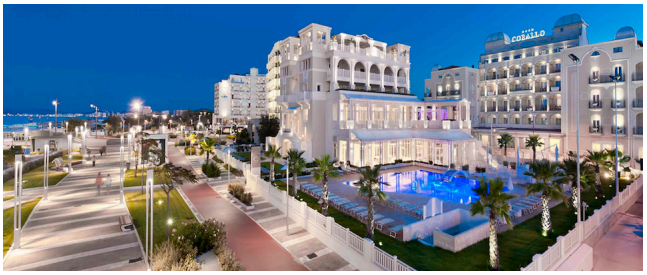

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Status and prospects of E336 Experiment at SLAC FACET-II on channeling plasma wakefield acceleration in structured solids

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Plasma wakefield acceleration in oriented structured solids (nanotubes and crystals) has a potential of extremely high acceleration gradients exceeding 1 TeV/m. One can exploit the nuclei-free space in nanotubes and crystals both to produce plasma waves and to accelerate channeling particles being contained within their channel and moving almost without collisions with ions.

In this work we present the progress, the challenges and the prospects of the E336 Experiment at SLAC FACET-II on plasma acceleration in structured solids. In addition, we present the new results on simulations of channeling of multi-GeV beam in carbon nanotubes manifesting their ordered structure.

Primary authors: ARINIELLO, Robert; BANDIERA, LAURA; CORDE, Sebastien; DAVOINE, Xavier; EKERFELT, Henrik; FIUZA, Frederico; GILLJOHANN, Max; GREMILLET, Laurent; KNETSCH, Alexander; MANKOVSKA, Yuliia; MARTINEZ, Bertrand; MATHERON, Aimé; PIEKARZ, Henryk; SAN MIGUEL CLAVERIA, Pablo; SHILTSEV, Vladimir; STOREY, Doug; SYTOV, Alexei; TABOREK, Peter; TAJIMA, Toshiki

Presenter: SYTOV, Alexei

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