



Contribution ID: 151

Type: talk

## Innovative single shot diagnostics for electrons from laser-plasma interaction at SPARC\_LAB

*Monday, September 25, 2017 5:15 PM (15 minutes)*

Plasma wakefield acceleration is the most promising acceleration technique known nowadays, able to provide very high accelerating fields ( $> 100$  GV/m), enabling acceleration of electrons to GeV energy in few centimeters. Due to the instabilities occurring during the process, single shot diagnostics are essential to properly characterize it.

In this work, an overview of the single shot diagnostics for electrons from laser-plasma interaction developed at SPARC\_LAB will be given: Electro Optic Sampling (EOS) for temporal measurement on fast electrons and Optical Transition Radiation (OTR) for an innovative one shot emittance measurements.

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**Session Classification:** WG5\_Parallel

**Track Classification:** WG5 - High-Gradient Plasma Structures/Advanced Beam Diagnostics