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Staging LWFA's using plasma mirrors

Wednesday 20 March 2024 12:00 (30 minutes)

The coupling of fresh drive laser pulses into LWFA stages compactly can be achieved by using thin film plasma mirrors. Plasma mirrors allow acceleration stages to be placed close to each other, which both increases the average acceleration gradient and reduces drift driven emittance growth. To be effective, plasma mirrors need to preserve the intensity to which the laser can be focussed while running stably at high repetition rates. Further, placing a plasma mirror in the path of the electron beam can adversely affect its beam quality through several mechanisms, and these will need to be mitigated if ultra-low emittances are to be preserved after multiple inter-stage couplings. In this talk, measurements of plasma mirror reflectivity, guiding of the reflected pulse, and high repetition rate operation will be presented, and methods for reducing emittance growth of the beam will be discussed.

Available for oral presentation in a session

Presenter: BACKHOUSE, Michael

Session Classification: Staging and scalability