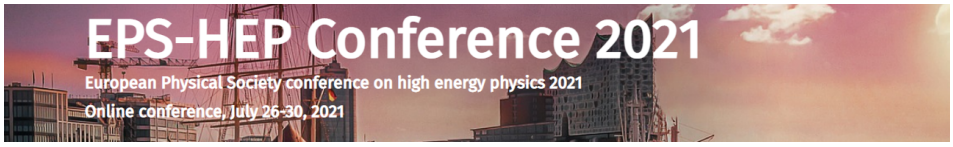

Contribution ID: **874** Type: **Poster**

From ATF2 to ATF3: the quest for nanobeams and their stabilization

The ATF2 Final Focus System (FFS) was designed as an energy-scaled version of the ILC FFS, with two main aims: (1) to demonstrate the effectiveness of the local chromaticity correction scheme for achieving an IP vertical beam size as small as 37 nm, and (2) to demonstrate the feasibility of beam orbit stabilization at the nanometer level. To date, an electron vertical beam size as small as 41 nm, essentially satisfying the ATF2 design goal, and stabilization with feedback latency as low as 150 ns, have been achieved. The ATF2 achievements have already verified the minimum technical feasibility of the ILC FFS. However, to maximize the luminosity potential of the ILC, a further investigation of the effects causing the intensity dependence of the IP spot size and optical aberrations, especially with smaller bx*, is crucial. To implement this program and based on the outstanding and unique results achieved by the ATF/ATF2 collaboration, plans for an upgraded beamline, ATF3, are being developed. We summarize the ATF2 results and present the R&D programme that could be pursued with the new ATF3 beamline.

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Collaboration / Activity

ATF/ATF2 collaboration

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Session Classification: T13 - Accelerator for HEP

Track Classification: Accelerators for HEP