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# FLASHForward X-2: Beam quality preservation in a plasma booster

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Staging of plasma-wakefield accelerators is essential to utilise them in particle physics or other applications requiring high energy beams.
Quality preservation in external beam injection is one of the key missing milestones towards this goal.
This and other topics related to the plasma booster will be studied at FLASHForward, a unique beam-driven plasma wakefield acceleration facility currently under construction at DESY (Hamburg, Germany),
in the frame of the FLASHForward X-2 experiment.
High-quality 1 GeV-class electron beams with $\mu m$-emittances from the free-electron laser FLASH will be utilised to generate driver-witness pairs
by using a mask in a dispersive section.
Alternatively, it is possible to generate two independent bunches directly in the photocathode electron-gun by using a double-pulse laser.

In this contribution, the physics case and the current status of the FLASHForward X-2 experiment will be reviewed.
The experimental installation will be described, with a focus on the electron beam line.
Electron beam dynamics and Particle-in-Cell simulations will be presented.

## Summary

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