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Studies of beam quality control in plasma accelerators at IHEP

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In the laser or charged beam driven plasma wakefield accelerators (PWAs), the output beam quality control is one of the main topics of recent researches. In this talk, I will firstly show a few novel injection mechanisms that our plasma acceleration group at IHEP recently proposed, which simultaneously improve the energy spread and the beam charge of the output beam. Next, I will present a new modeling of the three-dimensional betatron oscillation of the trailing beams in PWAs and show the long-term effect of the betatron oscillation, which show new effects that have been found for the first time. The new modeling may help to improve the trailing beam quality in long distance and high energy PWAs.

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