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Relativistic Flying Mirror for Extreme Light Sciences

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A relativistic flying mirror is breaking wake wave excited in tenuous plasma by an intense, short laser pulse. This highly nonlinear wave has a singularity of electron density and has a velocity nearly equals to the speed of light. Thus the electrons can work as a partially reflecting mirror moving nearly at the speed of light. This concept was first proposed by Bulanov et al. So far some of the features of the flying mirror have been confirmed in several experimental campaigns proving the frequency upshifting and reflectivity. We report our recent experimental results and discuss possible applications in extreme light sciences.

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