Development of a stable coupling of the Yee scheme with a linear current

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collaboration with

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We consider the coupling of a Yee scheme with an equation for the linear current, in view of reflectometry diagnostics. Our understanding is that most of the methods in the literature work very well, expect if electronic density has strong gradients and the simulation time is large, which is precisely our concern. We will show how to start from the energy balance equation to obtain intuition of a stable coupling strategy, and what is the consequence for the numerical degrees of freedom. This will be illustrated with physically based numerical tests.

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