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On the path to pair production: self-consistent PIC modeling of high energy photons in laser-plasma interaction THOMAS GRISMAYER, MARIJA VRANIC, RICARDO FONSECA, GoLP/IPFN - Instituto Superior Tecnico, Lisbon, Portugal, CHRISTOPHER HARVEY, ANTON ILDERTON, MATTIAS MARKLUND, Umeå universitet SE-901 87 Umeå Sweden, LUIS OLIVEIRA SILVA, GoLP/IPFN - Instituto Superior Tecnico, Lisbon, Portugal — Electron-positron pair production, at the focus of an intense laser, is currently a topic of considerable interest due to the development of extreme light. Out of the possible mechanisms, pair production seeded by an electron is likely to be the most dominant. This process comes in two forms: a single step process, in which the intermediate photon is virtual (trident), and a two step process, in which non linear Compton scattering produces a real photon from the incoming electron and this real photon then goes on to create a pair via stimulated pair production (Breit-Wheeler). We describe our strategy to include theses processes in a massively parallel PIC code (using the Osiris 2.0 framework) in a self-consistent manner, also taking into account radiation reaction.

Thomas Grismayer
GoLP/IPFN - Instituto Superior Tecnico, Lisbon, Portugal

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