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Angular moment model for the charge particle transport in radiation hydrodynamic codes JEAN-LUC FEUGEAS, PHILIPPE NICOLAI, CYRIL REGAN, BRUNO DUBROCA, EMMANUEL D'HUMIERES, VLADIMIR TIKHONCHUK, JEROME BREIL, MARINA OLAZABAL-LOUME, LUDOVIC HALLO, CELIA, Universite Bordeaux, France — An accurate and rapid kinetic model, derived from the Fokker-Planck equation, describing the collisional transport of charged particles will be presented. It involves an angular closure in the phase space leading to a set of hyperbolic equations for the moments of the distribution function evolving in time, space and energy. This method provides an alternative to the prohibitive cost of a direct solution to the full kinetic equation. Moreover, it is exact for the limitings cases of collimated beams and quasi-isotropic distributions. The numerical solution can be approximated with the usual schemes of the non-linear hyperbolic analysis. The transport kinetic module is coupled with the radiation hydrodynamic code CHIC and comparisons with several published results related to the fast ignition with inserted cone will be presented. The model will be further improved in order to take into account self consistent fields that are important for the fast electron transport.

[1] Breil et al, J.Co.Ph. 224, 785 (2007)
[2] Dubroca et al, to be published in Eu.J.Ph.D

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