

P5.2010 Modelling of the non-local transport of energy in laser plasmas with high-order numerical methods

Friday, 12 July 2019 14:00 (2 hours)

See the full abstract here <http://ocs.ciemat.es/EPS2019ABS/pdf/P5.2010.pdf>

The description of the energy transport processes in the laser plasma is crucial for capturing the dynamics of the lasertarget interaction relevant to shock ignition [1] and pre-pulses of ultra-intense lasers [2]. The diffusion approximation of the heat and radiation transport become inadequate even for the laser intensities 1015 W/cm² in many cases [3]. The non-local nature of the transport phenomena must be considered due to long mean-free-paths of the heated electron species compared to the characteristic length of the plasma temperature variations. The shift in the physical models of plasmas must be reflected in the numerical treatment of the problem too. The high-order finite element methods present a favourable option. We have proposed such method recently [4] and continue in the effort towards better modelling and understanding of the non-local phenomena by means of numerical simulations.

References

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Session Classification: Poster P5