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Radiation hydrodynamics in a moving-mesh code: goals and challenges

Abstract

Numerical hydrodynamics is an extremely powerful tool for simulating astrophysical fluids. However, making realistic models of astrophysical phenomena is a recurrent challenge due to the need of covering large dynamic ranges both spatially and temporally. Furthermore, in most cases, it is also necessary to consider many other physical processes. In this talk, I will present the capabilities of moving-mesh hydrodynamics for covering large spatial and temporal scales. Specifically, I will discuss my ongoing work on the implementation of the coupling of radiation into the hydrodynamical moving-mesh code JET. Methodology, challenges, and astrophysical applications will be discussed as well.