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Recent Progress in High-Order, Low-Order Methods for Thermal Radiative Transfer Problems

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Accurate modeling of thermal radiative transfer problems in the X-ray regime is an important and difficult task. One of the main challenges is the presence of absorption and re-emission, which causes a strong nonlinear interaction be- tween radiation and host media. Recently, we have developed a moment-based, scale-bridging algorithm for solving thermal radiative transfer problems. High-order, low-order (HOLO) method accelerates the solution of Boltzmann transport equation using discretely-consistent low-order, continuum system. In this talk, we discuss recent progress in the algorithmic development, including stability improvements, multiphysics extension, and preliminary parallel performance study.