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Jean M. Sexton* (jmsexton@lbl.gov), Lawrence Berkeley National Laboratory, 1 Cyclotron Road Mailstop 50A3111, Berkeley, CA 94720. *A Deferred Correction Coupling Strategy for Cosmological Simulations.*

We present a strategy for coupling the equations of baryonic gas dynamics to those for radiative heating and cooling in the context of Nyx, an N-body + gas dynamics code for large-scale cosmological simulations. The radiative and advective processes have differing time scales. To avoid Strang splitting errors, we couple the processes with a simplified spectral deferred correction strategy. For certain physical regimes, this improved coupling strategy improves stability and reduces the cost of integrating the heating and cooling terms. Numerical results will be presented for relevant cosmological simulations, including our Lyman-alpha forest test case. (Received March 03, 2020)