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Wavelet analysis approach for radiation from rapidly-evolving astrophysical plasmas SARAH REYNOLDS, MIKHAIL MEDVEDEV, SRIHARSHA POTHAPRAGADA, University of Kansas — High-energy astrophysical phenomena frequently emit strongly from localized regions of particle acceleration in which field configuration and plasma energy distribution can vary rapidly. Developing radiative modeling techniques suited to tracking these systems' evolution on various scales is an important problem in linking kinematic simulations with astronomical observations. Wavelet analysis, which improves upon Fourier analysis by being able to simultaneously track time and frequency information, has potential as a method of modeling and analyzing the radiative output of such systems. We develop the applicability of wavelet analysis to transient and explosive astrophysical phenomena such as supernovae, GRBs, and solar flares. We highlight features observed in wavelet spectral analysis of observations from such systems and explore the implications of such analysis for associated simulations.

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