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Research Area: Missile Defense

Missile defense applications require real-time processing and analysis of flash hyperspectral images for target missile kill assessment. To recover the target object from data captured by the sensor's focal plane array, a large scale system of linear equations must be solved. The corresponding matrix is sparse, non-symmetric, often not positive definite, and possibly singular. Moreover, both signal-dependent Poisson (photon) noise and post-detection noise corrupt the equations. The objective of this summer's task is to explore innovative approaches for solving this problem, and to demonstrate image reconstruction algorithms specifically designed for possible implementation on emerging ultrafast multicore computing platforms.

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