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Observer motion and boosting effects of the cosmic background spectrum at high multipoles, solutions and perspectives

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The peculiar motion of an observer relative to an ideal reference frame at rest with respect to the cosmic background produces boosting effects which modify and transfer at higher multipoles the frequency spectrum of the isotropic background. To mitigate the computational effort needed for accurate theoretical predictions, I present analytical solutions of a linear system able to evaluate the spherical harmonic expansion coefficients for (analytical or semi-analytical) backgrounds, also extended to generic tabulated functions. Owing to the dipole spectrum frequency dependence and to precise inter-frequency calibrations, it will be possible to constrain (or even detect) the tiny imprints in the background spectrum from a variety of cosmological and astrophysical processes.

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