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Full-sky, arcminute-scale, 3D models of Galactic microwave foreground dust emission based on filaments CARLOS HERVIAS, KEVIN HUFFENBERGER, Florida State University — We present the DustFilaments code, a full sky model for the mm Galactic emission of thermal dust. Our model, composed of millions of filaments that are imperfectly aligned with the magnetic field, is able to reproduce the main features of the dust angular power spectra at 353 GHz as measured by the Planck mission. Our model is made up of a population of filaments with sizes following a Pareto distribution, with an axis ratio between short and long semi-axes ~ 0.16 and an angle of magnetic field misalignment with a dispersion RMS(θ_{LH})= 10°. On large scales our model follows a Planck-based template. On small scales, our model produces spectra that behave like power-laws up to $\ell \sim 4000$ or smaller scales by considering even smaller filaments, limited only by computing power. We can produce any number of Monte Carlo realizations of small-scale Galactic dust. Our model will allow tests of how the small-scale non-Gaussianity affect CMB weak lensing, and the consequences for the measurement of primordial gravitational waves or relativistic light relic species. Our model also can generate frequency decorrelation on the Modified Black Body (MBB) spectrum of dust, and is freely adjustable to different levels of decorrelation.

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