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CoLoRe: fast cosmological realisations over large volumes with multiple tracers

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We present CoLoRe, a public software package to efficiently generate synthetic realisations of multiple cosmological surveys. CoLoRe can simulate the growth of structure with different degrees of accuracy, with the current implementation supporting lognormal fields, first, and second order Lagrangian perturbation theory. CoLoRe simulates the density field on an all-sky light-cone up to a desired maximum redshift, and uses it to generate multiple 2D and 3D maps: galaxy positions and velocities, lensing (shear, magnification, convergence), integrated Sachs-Wolfe effect, line intensity mapping, and line of sight skewers for simulations of the Lyman-α forest.

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