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Efficient tunable generic model for self-assembling fluid bilayer membranes MARKUS DESERNO, IRA R. COOKE, KURT KREMER, Max-Planck-Institut for Polymer Research, Mainz, Germany — We present a new model for the simulation of generic lipid bilayers in the mesoscopic regime (between a few nanometers and many tens of nanometers), which is very robust, versatile, and extremely efficient, since it avoids the need for an embedding solvent. Based entirely on simple pair potentials, it features a wide region of unassisted self assembly into fluid bilayers without the need for careful parameter tuning. The resulting membranes display the correct continuum elastic behavior with bending constants in the experimentally relevant range. It can be readily used to study events like bilayer fusion, bilayer melting, lipid mixtures, rafts, and protein-bilayer interactions.

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