1159-65-83 **Vladimir Yushutin** and **Annalisa Quaini*** (aquaini@central.uh.edu), Department of Mathematics, University of Houston, 3551 Cullen Blvd, Houston, TX 77204, and **Maxim Olshanskii**. *Numerical modelingof phase separation on dynamic surfaces.*

We present a model of lateral phase separation in a two component material surface. The resulting fourth order nonlinear PDE can be seen as a Cahn-Hilliard equation posed on a time-dependent surface. Only elementary tangential calculus and the embedding of the surface in $\mathbb{R}^3$ are used to formulate the model, thereby facilitating the development of a fully Eulerian discretization method to solve the problem numerically. A hybrid method, finite difference in time and trace finite element in space, is introduced. The method avoids any triangulation of the surface and uses a surface-independent background mesh to discretize the equation. Thus, the method is capable of solving the Cahn-Hilliard equation numerically on implicitly defined surfaces and surfaces undergoing strong deformations and topological transitions. We assess the approach on a set of test problems and apply it to model spinodal decomposition and pattern formation on colliding surfaces. (Received July 30, 2020)