1154-76-2396 **Lynn Schreyer*** (lynn.schreyer@wsu.edu), Pullman, WA 99164, **Nikolas Voulgarakis** (n.voulgarakis@wsu.edu), Pullman, WA 99164, **Zachary Hilliard** (zachary.hilliard@wsu.edu), Pullman, WA 99164, **Sergey Lapin** (slapin@wsu.edu), Pullman, WA 99164, and **Loren Cobb** (loren.cobb@ucdenver.edu), Denver, CO 80217. *A Deterministic Model for Mammal Migration based on a Continuum Mechanics Phase-Field Approach of Fluid Flow through Porous Media.* Preliminary report.

Here we discuss how a new deterministic model for mammal migration was developed by using a methodical approach heretofore used to develop models for fluid flow through porous media. Mammal migration characteristics that are captured by the proposed model include terrain features and that herds prefer to stay at an "equilibrium density", i.e. that animals (and people) prefer to be not too far nor too close to each other. To develop such a model, we use hybrid mixture theory (a combination of upscaling via averaging and exploiting an entropy inequality) incorporating concepts from phase field modeling to obtain a generalized Cahn-Hilliard equation. In this talk we go through the evolution of our model and present some numerical simulations. (Received September 17, 2019)