**On The Development and Performance of a First Order Stokes Finite Element Ice Sheet Dynamical Core Built Using Trilinos Software Components**

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This talk describes the new Albany/FELIX parallel, scalable and robust First-Order (FO) Stokes finite element ice sheet code developed using Trilinos libraries. Focus will be on the computational aspects of the code: verification; multilevel preconditioning to achieve good parallel scalability for FO systems; homotopy continuation techniques for robust nonlinear solves; many-core performance portability. Coupling of Albany/FELIX to other land ice dycores (CISM, MPAS) for dynamic simulations and global climate runs will also be discussed.