**MINH BUI**, North Carolina State University
*Multivariate Monotone Inclusions in Saddle Form*

We propose a novel approach to monotone operator splitting based on the notion of a saddle operator. Under investigation is a highly structured multivariate monotone inclusion problem involving a mix of set-valued, cocoercive, and Lipschitzian monotone operators, as well as various monotonicity-preserving operations among them. This model encompasses most formulations found in the literature. The analysis leads to an algorithm of unprecedented flexibility, which achieves full splitting, exploits the specific attributes of each operator, is asynchronous, and requires to activate only blocks of operators at each iteration, as opposed to activating all of them. Several applications are discussed.

Joint work with P. L. Combettes.