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**Greg J Reid\*** ([reid@uwo.ca](mailto:reid@uwo.ca)), Department of Applied Mathematics, University of Western Ontario, London, Ontario N6A 5B7, Canada. *Compatible discretization of constrained partial differential equations*. Preliminary report.

Many fundamental systems of partial differential equations of applied mathematics arise in constrained form. For example the equations of elasticity and Maxwell's equations in media are of this type. We discuss the application of Wu's fast prolongation method to such systems, and its interaction with discretization operators. To make the method algorithmic, we employ the methods of numerical algebraic geometry. (Received September 14, 2010)