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**Solving Variational Inequalities and Cone Complementarity Problems in Non-Smooth Dynamics using the Alternating Direction Method of Multipliers***Alessandro Tasora, Simone Benatti, Rinaldo Garziera*

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This proposed manuscript proposes some advancements over the state of the art:

* an ADMM method is used to solve non-smooth dynamics
* a custom form of the ADMM method is outlined, that leverages sparsity and aims at low computational complexity
* a practical way for warm starting the method is proposed,
* a diagonal preconditioning variant is proposed, with block-scaling for frictional contacts,
* different ADMM step adaption policies are evaluated,
* application to cases with both rigid and flexible parts is tested, showing that it works up to extremely stiffness in finite elements and that it can handle large mass ratios – cases that are always difficult to handle in the field of non-smooth dynamics.

Best regards,

Prof. Alessandro Tasora

*Department of Engineering and Architecture  
University of Parma, Italy  
alessandro.tasora@unipr.it*