Title : **A Stochastic Look on Primal-Dual Proximal Algorithms**

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Abstract:

In the fields of inverse problems or machine learning, one of the main benefits which can be drawn from primal-dual optimization approaches is that they do not require any linear operator inversion. In addition, they allow to split a convex objective function in a sum of simpler terms which can be dealt with individually either through their proximity operator or through their gradient if they correspond to smooth functions. Proximity operators constitute powerful tools in nonsmooth functional analysis which have been at the core of many advances in sparsity aware data processing. Using monotone operator theory, the convergence of the resulting algorithms can be shown to be theoretically guaranteed. In this talk, new developments concerning proximal primal-dual approaches will be presented.

More precisely, a randomization of these methods will be proposed, which allow them to be applied block-coordinatewise or in a distributed fashion.