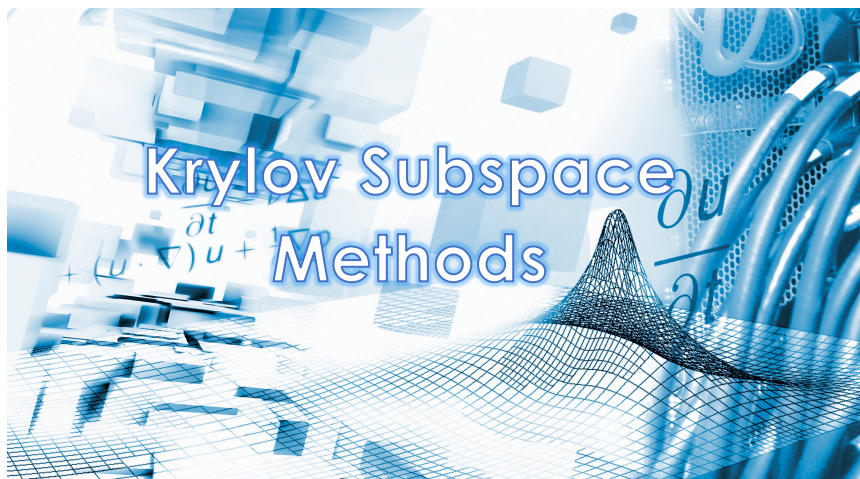


## *Graduate Mathematics Seminar*

Krylov subspace methods as a tool to solve large-scale inverse problems and estimate maximum a posteriori for non-Gaussian noise.

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*Arizona State University*



**Abstract:** Ill-posed inverse problems arise in many fields of science and engineering. Their solution, if it exists, is very sensitive to perturbations in the data. The challenge of working with linear discrete ill-posed problems comes from the ill-conditioning and the possible large dimension of the problems. Regularization methods try to reduce the sensitivity by replacing the given problem with a nearby one, whose solution is less affected by perturbations. The methods in this talk are concerned with solving large scale problems by projecting them into a Krylov or generalized Krylov subspace of fairly small dimension. The first type of methods discussed are based on Bregman-type iterative methods that even though the high quality reconstruction that they deliver, they may require a large number of iterations and this reduces their attractiveness. We develop a computationally attractive linearized Bregman algorithm by projecting the problem to be solved into an appropriately chosen low-dimensional Krylov subspace.

*When:* Monday, March 29, 2021, 6:00 – 7:00 pm  
*Where:* Zoom

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