1046-65-1460   **Abdramane Serme*** (`aserme@bmcc.cuny.edu`) and **Lucio M.G. Prado**
(`lprado@bmcc.cuny.edu`), Department of Mathematics - BMCC - The City, University of New
York, 199 Chambers Street, New York, NY 10007-1097. *The Schur Aggregation and Ill
Conditioned Linear System.*

The talk is about solving ill conditioned linear system $Ax = b$ by the approach of the Schur aggregation.It is well known that its accurate solution $x = A^{-1}b$ can be computed readily if the linear system is well conditioned but the computation requires special care if the system is ill conditioned. The Schur aggregation is the process of reducing the linear system $Ax = b$ using the SMW (Sherman-Morrison-Woodbury) formula
$A^{-1} = (C - UV^H)^{-1} = C^{-1} + C^{-1}U(I_r - V^H C^{-1} U)^{-1} V^H C^{-1}.$
We essentially reduce the computation of $x = A^{-1}b$ to the computation of the Schur aggregate $S = I_r - V^H C^{-1} U$. We will also discuss additive preconditioning $A \to C = A + UV^H$ for preconditioner UV^H of a smaller rank r.