

Meeting: 999, Nashville, Tennessee, AMS CP 1, Session for Contributed Papers

999-15-223 **Jun Ji*** (jji@kennesaw.edu), Department of Mathematics, Kennesaw State University, 1000 Chastain Road, Kennesaw, GA 30144. *Explicit expressions of the generalized inverses and condensed Cramer rules.* Preliminary report.

In this talk, we obtain an explicit representation of the $\{2\}$ -inverse $A_{T,S}^{(2)}$ of a matrix $A \in C^{m \times n}$ with the prescribed range T and null space S . As special cases, new expressions for the Moore-Penrose inverse A^+ and Drazin inverse A^D are derived. Through explicit expressions, we re-derive the condensed Cramer rules of Werner for minimal-norm least squares solution of linear equations $Ax = b$ and propose two new condensed Cramer rules for the unique solution of a class of singular system $Ax = b$, $x \in R(A^k)$, $b \in R(A^k)$, $k = \text{Ind}(A)$. Finally, condensed determinantal expressions for A^+ , A^D , AA^+ , A^+A , and AA^D are also presented. (Received August 23, 2004)