

1067-15-2209 **Brian D. Sutton*** (bsutton@rmc.edu), Randolph-Macon College, 204 Henry St., PO Box 5005, Ashland, VA 23005. *Numerical stability of an algorithm for the complete CS decomposition.*

The CS (cosine-sine) matrix decomposition is an analogue of the singular value decomposition for partitioned unitary matrices. It can be used to compute the principal angles between linear subspaces, to find canonical correlations between statistical variables, and to break a quantum computer program into quantum logic gates. Although the decomposition has been known to exist since 1977, an algorithm for computing the full, original form of the decomposition was only recently discovered by the speaker. This talk will relate recent results on numerical stability, including a reformulation of the algorithm that enables easier analysis and appears useful outside of the context of a numerical stability proof. (Received September 22, 2010)