

1086-49-1581 **Rongjie Lai***, 3620 S. Vermont Ave., KAP 104, Los Angeles, CA 90089, and **Stanley Osher**. *A Splitting Method for Orthogonality Constrained Problems*. Preliminary report.

Orthogonality constrained problems are widely used in science and engineering. However, the non-convex constraint is a big challenge to solve the problems efficiently. In this talk, a splitting method will be represented to tackle the optimization problems with orthogonality constraints. Using the proposed method, the constrained problems can be iteratively solved by computing corresponding unconstrained problems and constrained quadratic problems with analytic solutions. As numerical experiments, we demonstrate the robustness and efficiency of our methods in several problems including constructing global conformal mapping for genus-0 surfaces, correcting direction fields and restoring noisy color images. (Received September 23, 2012)