1116-94-2901 **Shuyang Ling*** (`syling@math.ucdavis.edu`), One Shields Ave., Department of Mathematics, University of California Davis, Davis, CA 95616, and **Thomas Strohmer** (`strohmer@math.ucdavis.edu`), One Shields Ave, Department of Mathematics, University of California Davis, Davis, CA 95616. *Self-calibration and biconvex compressive sensing.*

The design of hardwares with higher precision always comes along with the increasing need of calibration. However, calibration can be expensive and difficult for high-performance sensors and even impossible sometimes. Self-calibration manifest itself as one possible way to resolve this issue. The idea of self-calibration is to equip the sensors or systems with a smart algorithm which can take care of calibration automatically. In this work, we bring self-calibration, biconvex optimization and compressive sensing together. We will introduce a new framework of biconvex compressive sensing with a new method called SparseLift, which can handle a class of self-calibration problems successfully. To be more specific, we consider a concrete model as y = DAx where x is the unknown sparse signal and D is an unknown diagonal matrix which represents the calibration parameters. We will show how this problem can be solved via "Lifting" techniques and SparseLift efficiently and robustly. Theoretic guarantees are derived for exact recovery of D and x simultaneously and the effectiveness and robustness of SparseLift will be illustrated by numerical examples. (Received September 23, 2015)