1103-41-51 **David Gross** and **Felix Krahmer*** (f.krahmer@math.uni-goettingen.de), University of Goettingen, Institute for Numerical & Applied Mathematics, Lotzestr. 16-18, 37083 Goettingen, Germany, and **Richard Kueng**. *Recovery Guarantees for PhaseLift from Non-Gaussian Measurements.*

The problem of retrieving phase information from amplitude measurements alone has appeared in many scientific disciplines over the last century. PhaseLift is a recently introduced algorithm for phase recovery that is computationally tractable, numerically stable, and comes with rigorous performance guarantees. PhaseLift is optimal in the sense that the number of amplitude measurements required for phase reconstruction scales linearly with the dimension of the signal. However, it specifically demands Gaussian random measurement vectors - a limitation that restricts practical utility and obscures the specific properties of measurement ensembles that enable phase retrieval. In this talk, we extend these results to various non-Gaussian random measurement setups. Firstly, we study a partial derandomization of PhaseLift that only requires sampling from t-designs, polynomial size vector configurations, which have been studied in algebraic combinatorics, coding theory, and quantum information. Beyond the specific case of PhaseLift, this work highlights the utility of t-designs for the derandomization of data recovery schemes. Furthermore, we discuss the case coded diffraction patterns, that is, Fourier measurements with random mask, a setup inspired by practical scenarios. (Received August 06, 2014)