

# AN ALGEBRAIC APPROACH TO PHASE RETRIEVAL

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The problem of phase retrieval is to reconstruct a signal from certain magnitude measurements. This problem is closely related to low-rank matrix completion and has many imaging-related applications: microscopy, optics, and diffraction imaging, among others. In purely mathematical terms, phase retrieval means recovering a complex vector from the modulus of its inner product with certain measurement vectors. One can ask how many measurements are necessary for this recovery to be possible. I'll discuss recent progress made on this problem by translating it into algebraic language and talk about my adventures as an algebraist in frame theory.

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