ITERATIVE METHODS FOR CONSTRAINED PHASE RECOVERY

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The phase retrieval problem is notoriously challenging numerically due to the nonconvexity of the magnitude constraint. We shall first examine the geometric structure of this constraint and show why it may make various algorithms fail. These observations will serve as a basis for the second part of the talk in which we shall discuss several numerical options for approaching the phase retrieval problem. The focus will be placed on constraint dilation methods, descent methods, convexification methods (algebraic and geometrical), projections methods, and fixed point methods.