Semidefinite programming and indefinite moment problems on the unit circle

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Semidefinite programming, in which one maximizes a linear function subject to the constraint that an affine combination of symmetric matrices is positive semidefinite, has been successfully used in finding numerical solutions to several positive definite matrix completion and factorization problems. Recently, the algorithms were adapted for minimizing the rank of $B(x)$, subject to $A(x) \geq 0$ and $B(x) \geq 0$, where A and B are symmetric matrices that depend affinely on x. We show how the latter can be used for finding numerical solutions for indefinite moment problems on the unit circle.