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**Jonathan D Hauenstein\*** ([jhauenst@math.tamu.edu](mailto:jhauenst@math.tamu.edu)), Department of Mathematics, Mailstop 3368, Texas A&M University, College Station, TX 77845-3368, and **Viktor Levandovskyy** ([Viktor.Levandovskyy@math.rwth-aachen.de](mailto:Viktor.Levandovskyy@math.rwth-aachen.de)), RWTH Aachen University, Templergraben 64, D-52062 Aachen, Germany. *Certifying solutions to systems of polynomial-exponential equations.*

Polynomial-exponential systems are systems of analytic functions which are polynomial in both the variables and finitely many exponentials. Such systems naturally arise from modeling compliant mechanisms and in electrical engineering. In this talk, I will discuss recent work with V. Levandovskyy regarding the development of an effective criterion using Smale's  $\alpha$ -theory to certify solutions. Examples using the software package alphaCertified will demonstrate the new approach. (Received August 22, 2011)