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Kathryn Lund-Nguyen  
**The Radau-Lanczos method for matrix functions**

Department of Mathematics  
Temple University  
1805 N Broad Street  
Rm 638 Wachman Hall  
Philadelphia  
PA 19122  
`lund-nguyen@temple.edu`  
Andreas Frommer  
Marcel Schweitzer  
Daniel B. Szyld

We present a new iterative method for computing  $f(A)$ , derived from a relationship between the standard Lanczos method and a Gauss-Radau quadrature rule. We show that this method, called the Radau-Lanczos method, converges when  $A$  is Hermitian positive definite and  $f$  is a Stieltjes function. We also show that the restarted version of this method converges and present numerical results showing this method performing better than the standard Lanczos method in terms of attainable error norm and iteration count.