1138-42-311   **Mark A Davenport*** (`mdav@gatech.edu`), Georgia Institute of Technology, School of Elec. &
Comp. Engineering, 777 Atlantic Drive NW, Atlanta, GA 30332, and **Santhosh Karnik** and
Justin Romberg. *Fast algorithms for prolate computations.*

The so-called prolate matrix is a structured matrix which arises in a wide variety of signal processing applications – in particular, when working with samples of a bandlimited signal that are taken over a finite time interval. The prolate matrix is highly ill-conditioned, which makes applying generic matrix algorithms ineffective. However, the eigenvalues of the prolate matrix have a highly structured and predictable behavior. In this talk, I will discuss the spectral properties of the prolate matrix and show how we can leverage these properties to yield fast algorithms for working with both uniformly spaced and non-uniformly spaced samples of a bandlimited signal. (Received February 12, 2018)