Prolate spheroidals are eigenfunctions of an integral operator

\[ W(a) \ni f \mapsto \int_{-\tau}^{\tau} K(t, \cdot) f(t) \, dt. \]

with a sinc kernel \( K(t, z) = \frac{\sin(a(t-z))}{\pi(t-z)}. \) Here \( W(a) \) is the Paley-Wiener class of signals with bandlimit \( a. \) We shall survey some remarkable properties and applications of these functions and indicate a method of their stable computation on the interval \([-\tau, \tau].\)