998-42-36 **Jeffrey A Hogan*** (jeffh@uark.edu), Department of Mathematical Sciences, University of Arkansas, Fayetteville, AR 72701, and **Joseph D Lakey** (jlakey@nmsu.edu), Department of Mathematical Sciences, New Mexico State University, Las Cruces, NM 88003. *On the role of the Zak transform in wavelet construction and design.*

The Zak transform has long been known as a useful tool in time-frequency analysis. Its appearance in time-scale analysis is the subject of this paper. In particular, we show how the Zak transform may be used to construct wavelets and scaling functions which generate multiresolution spaces amenable to efficient sampling algorithms and to extrapolation procedures in the sense of Papoulis and Gerchberg. (Received January 04, 2004)