1014-30-957 **William B. Jones** and **Walter M. Reid***, Walter M. Reid, Department of Mathematics, UW-Eau Claire, Eau Claire, WI 54702-4004. *Distribution Analysis Using PPC-Continued Fractions.*

This presentation deals with the *Distribution Analysis Problem* (DAP) which consists of finding an unknown distribution ψ on $[-\pi, \pi]$ using sequences of real numbers $X_N(m)$, $m = 0, 1, 2, ..., N-1$, $N = 2I+1$, $I \in \mathbf{N}$, obtained from superpositions of sinusoidal waves determined by ψ. The method described here, called the Nm-process, is similar to the N-process which has been used in earlier work in connection with the frequency analysis problem (FAP). Both methods employ the even approximants $R_{2m}(\psi_N, z)$ of positive Perron-Caratheodory (PPC) continued fractions, where ψ_N is a distribution function on $[-\pi, \pi]$ determined by the $X_N(m)$ data. For the Nm-process it is shown that, with certain restrictions imposed on ψ, $R_{2m}(\psi_N, z) \to H(\psi, z)$ as $N \to \infty$ and $m \to \infty$, where $H(\psi, z)$ is the Herglotz transform of ψ. While these results are restricted to distribution functions ψ such that $\psi'(\theta)$ exists and is a bounded even function on $[-\pi, \pi]$, the long term goal is the treatment of general distribution functions ψ. (Received September 26, 2005)