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Ahmed I Zayed* (zayed@mail.ucf.edu), Department of Mathematics, University of Central Florida, Orlando, FL 32816. *A Generalization of the Fractional Fourier Transform*. Preliminary report.

The fractional Fourier transform has been the focus of many research papers in the last seven years because of its numerous applications in optics and signal processing. The fractional Fourier transformation of order α can be thought of as a linear integral transformation that depends on a parameter α , $0 \leq \alpha \leq 1$, such that $F_0 = I$ is the identity transformation and $F_1 = \mathcal{F}$ is the standard Fourier transformation. In this talk we discuss some generalizations and applications of the fractional Fourier transform. One of these generalizations leads to a new integral transform that we call the fractional Hankel transform, H_μ^α , where $-1/2 \leq \mu$ and $0 \leq \alpha \leq 1$. The fractional Hankel transform, H_μ^α , has the property that $H_\mu^0 = I$ is the identity transform and $H_\mu^1 = H_\mu$ is the standard Hankel transform of index μ . (Received September 21, 2000)