1135-81-2579 **Gordon Aiello*** (gordon-aiello@uiowa.edu) and **Wayne Polyzou** (polyzou@uiowa.edu). *The Stieltjes Moment Problem and Euclidean Relativistic Quantum Mechanics - Scattering Asymptotic Conditions.*

One recipe for formulating a relativistic quantum mechanical scattering theory utilizes a two-Hilbert space approach, denoted by $\mathcal{H}$ and $\mathcal{H}_0$, upon each of which a unitary representation of the Poincaré group is given. Physically speaking, $\mathcal{H}$ models a complicated interacting system of particles one wishes to understand, and $\mathcal{H}_0$ an associated simpler structure one uses to construct asymptotic boundary conditions on states in $\mathcal{H}$.

The above considerations lead to the study of the existence of strong limits of operators of the form $e^{iHt}Je^{-iH_0t}$, where H, H_0 are self-adjoint generators of the time translation subgroup of the unitary representations of the Poincaré group on $\mathcal{H}, \mathcal{H}_0$, and J is a contrived mapping from $\mathcal{H}_0$ into $\mathcal{H}$.

The existence of said limits in Euclidean quantum theories depends on the choice of J and leads to a connection with the Stieltjes moment problem, which concerns the relationship between numerical sequences $\{\mu_n\}_{n=0}^{\infty}$ and the existence/uniqueness of measures $\alpha(x)$ on the half-line satisfying

$$\mu_n = \int_0^{\infty} x^n d\alpha(x).$$

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