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Discrete Character of Meson Masses M.A.K. LODHI, NORMAN REDINGTON, Texas Tech U — Regge plots have played an important role in the study of mesons for nearly half a century. The success of quark model reduced interest in this approach, but predicting the existence and shape of Regge trajectories remains as a test of success of a phenomenological meson model. Approximately linear Regge trajectories have been shown to arise from one of the earliest string models of the meson, and their existence is still regarded as an evidence for a meson as a pair of quarks. Regge expressed mesons of a family as trajectories in the mass squared-angular momentum plane as a multiple set of curves. These lines are analogous to the hydrogen atom energy level-angular momentum relationship. Further investigation shows that these sets of multiple lines can be reduced to a single line representing an entire meson family. In this work, the entire set of multiple lines representing the light meson family is replaced by a single line, which arises naturally when the squared mass of each meson depends linearly on the squared mass of the pion. This relation is analogous to the Rydberg formula for the hydrogen spectrum, with the electron mass replaced by the pion mass.

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