1172-39-135   **Giorigo Young***, Department of Mathematics, Rice University, MS-136, Box 1892, Houston, TX 77251-1892, and **Milivoje Lukić** and **Benjamin Eichinger**. *Orthogonal rational functions with real poles, root asymptotics, and GMP matrices.*

There is a vast theory of the asymptotic behavior of orthogonal polynomials with respect to a measure on $\mathbb{R}$ and its applications to Jacobi matrices. That theory has an obvious affine invariance and a very special role for ∞. In this talk, we will discuss a preprint which extend aspects of this theory in the setting of rational functions with poles on $\overline{\mathbb{R}} = \mathbb{R} \cup \{\infty\}$, obtaining a formulation which allows multiple poles and proving an invariance with respect to $\overline{\mathbb{R}}$-preserving Möbius transformations. In this work, we obtain a characterization of Stahl–Totik regularity of a GMP matrix in terms of its matrix elements; as an application, we give a proof of a conjecture of Simon – a Cesàro–Nevai property of regular Jacobi matrices on finite gap sets. (Received August 23, 2021)