# The Gleason–Kahane–Żelazko theorem and automatic countinuity

Javad Mashreghi

*Laval University*

`javad.mashreghi@mat.ulaval.ca`

The study of outer preserving linear maps on hardy spaces $H^p$ led us to a generalized version of Gleason–Kahane–Żelazko theorem for modules. In particular, linear functionals $T : H^p \to \mathbb{C}$ (no continuity assumption) whose kernels do not include any outer function are not frequent and should be of a very specific form which entails to automatic continuity. In this new work, we take one step further and study such results in the general framework of reproducing kernel Hilbert spaces. In a sense, this is the most general setting which include numerous special function cases as a special case, e.g., Bergman, Dirichlet, Besov, the little Bloch, and VMOA.