REAL RANK AND TOPOLOGICAL DIMENSION OF C^*-ALGEBRAS ASSOCIATED TO BOOLEAN DYNAMICAL SYSTEMS

Abstract. In this talk, we introduce a notion of Condition $(K_{\mathcal{B}})$ (an analogue notion of Condition (K) for usual directed graphs) of a Boolean dynamical system $(\mathcal{B}, \mathcal{L}, \theta)$ and prove that if $C^*(\mathcal{B}, \mathcal{L}, \theta)$ has real rank zero, then $(\mathcal{B}, \mathcal{L}, \theta)$ satisfies Condition $(K_{\mathcal{B}})$. We also show that if $(\mathcal{B}, \mathcal{L}, \theta)$ satisfies Condition $(K_{\mathcal{B}})$, then $C^*(\mathcal{B}, \mathcal{L}, \theta)$ has topological dimension zero and is K_0-liftable. Using this results, it is proved that when $C^*(\mathcal{B}, \mathcal{L}, \theta)$ is purely infinite in the sense of Kirchberg-Rørdam, $C^*(\mathcal{B}, \mathcal{L}, \theta)$ has real rank zero if and only if $(\mathcal{B}, \mathcal{L}, \theta)$ satisfies Condition $(K_{\mathcal{B}})$. This is a joint work with Toke Meier Carlsen.