K-THEORY AND K-HOMOLOGY OF C^*-ALGEBRAS
FOR ROW-FINITE GRAPHS

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ABSTRACT. We compute the K-groups and K-homology groups of C^*-algebras of row-finite graphs using the universal covering trees of graphs and Pimsner's six-term exact sequences for KK-groups of crossed products by groups acting on trees.

1. Introduction. Since Cuntz and Krieger introduced a class of C^*-algebras related to subshifts of finite type ([**1**]), these algebras have been generalized in many ways: C^*-algebras of Smale spaces ([**8, 9, 18–20, 23, 26**]) from the viewpoint of hyperbolic dynamics, C^*-algebras of row-finite graphs ([**11–15, 21**]) and C^*-algebras of countably infinite graphs ([**5, 6, 21**]) from the viewpoint of graph representations of subshifts of finite type, and C^*-algebras of continuous graphs and Cuntz-Pimsner algebras ([**2, 10, 17**]) from the viewpoint of Hilbert-bimodules. Many of these algebras with appropriate conditions are contained in the bootstrap category of Rosenberg and Schochet [**22**] so that it is possible to classify these algebras by computing K-groups.

In this paper, we compute the K-groups and K-homology groups of row-finite graph C^*-algebras. Firstly, we remark that Pask, Raeburn and Szymański [**14, 21**] computed the K-groups of C^*-algebras of row-finite graphs using the canonical gauge action of S^1, Pimsner-Voiculescu six-term exact sequence for crossed products by **Z** and Takai duality. And Drinen and Tomforde [**4, 25**] computed Ext-groups of C^*-algebras of row-finite graphs with no sinks extending Cuntz and Krieger's method.

We approach the computations of K-groups and K-homology groups from a different direction. The origin of this paper is the author's attempt to understand the works of Kumjian and Pask [**11**] and