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Wee-Liang Gan and **Liping Li***, 900 University Avenue, Surge 243, Riverside, CA 92521.

Noetherian Property of infinite EI categories.

Recently a few infinite EI categories are used to study representations of families of finite groups (for instance, symmetric groups, general linear groups) simultaneously. Particular examples include the category of finite sets and injections between them (called *FI category*), the category of finite dimensional spaces over a finite field and linear embeddings, etc. These categories are shown to have many nice properties such as local Noetherian property and representation stability.

In this talk we consider arbitrary infinite EI categories \mathcal{C} of type A_∞ , and show that certain combinatorial assumptions imply the local Noetherian property of the category algebra $k\mathcal{C}$ where k is a field of characteristic 0. This gives a uniform proof of the local Noetherian property for many interesting examples.

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