**Academy of Mathematics and Systems Science, CAS**
**Colloquia & Seminars**

**Speaker:** 鲁东,西南交通大学

**Inviter:**

**Title:** Signature-based standard basis algorithm under the framework of GVW algorithm

**Language:** Chinese

**Time & Venue:** 2023.11.23 15:10-16:10 腾讯会议：587-656-925

**Abstract:**

Cover theorem serves as the theoretical foundation of the GVW algorithm, one of the most important signature-based algorithms, can eliminate a large number of useless J-pairs that are analogous to S-polynomials without any reduction. In this talk, we extend the cover theorem that is applicable for global orders and a special class of local orders to any semigroup order. Because a semigroup order is not necessarily global or local, there may not be a minimal signature in an infinite set, resulting in the difficulty of proving the cover theorem by existing methods. Building upon the pioneering idea of the Mora normal form algorithm, we propose a more comprehensive and general proof for the cover theorem while bypassing the need to choose a minimal signature. Therefore, the algorithm for signature-based standard bases is presented for any semigroup order under the framework of the GVW algorithm. This is a joint work with Dingkang Wang, Fanghui Xiao and Xiaopeng Zheng.



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