

## **BOUNDEDNESS OF COMPLEMENTS IN POSITIVE CHARACTERISTICS**

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**Time: Fri., Oct. 9th, 9:30-11:00**

**Venue: Room 102, SCMS**

**Abstract:** The theory of complements plays a central role in the study of singularities and boundedness in birational geometry. Extending this theory to positive characteristic presents substantial challenges, including the failure of classical vanishing theorems and the presence of inseparable phenomena. In this talk, I will discuss boundedness of complements for Fano-type log canonical threefold pairs with suitable fibration structures over algebraically closed fields of sufficiently large positive characteristic. Both the complement index and the required lower bound on the characteristic depend only on the coefficient data. I will also discuss bounded relative complements over positive-dimensional bases and outline the main ingredients of the proofs, including a canonical bundle formula for suitable Fano type fibrations and vanishing theorems on threefolds. These results extend an important part of the inductive approach to complements to the positive-characteristic setting. As an application of the theory of complements, I will also discuss the boundedness of Stein degrees in positive characteristic. This illustrates how bounded complements can be used to control the finite part in the Stein factorization of morphisms arising from log canonical centers.