

**Speaker:** He Xuhua

**Title:** Kottwitz-Rapoport conjecture on crystals with additional structure

**Abstract:** In 1973, Mazur showed that the Newton polygon of a crystal lies below the Hodge polygon of the associated isocrystal and the two polygons have the same end points. In 2003, Kottwitz and Rapoport showed that the converse is true, i.e., given two such polygons, there exists a crystal with given polygons as its Hodge polygon and Newton polygon respectively. Kottwitz and Rapoport conjectured a similar statement for crystals with additional structure. This conjecture plays an important role in the study of reduction of Shimura varieties. In this talk, I will explain this conjecture, its relation to the Shimura varieties, and I will discuss some ideas of the proof.