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Linear Arithmetic Fundamental Lemma and Intersection numbers for CM cycles on Lubin—Tate spaces

The Guo-Jacquet Fundamental Lemma is a higher dimensional generalization of the local field analogue of the Waldspurger formula. It has an arithmetic generalization called the Linear Arithmetic Fundamental Lemma. It is conjectured by Wei Zhang interpreting the derivative of certain orbital integral into certain intersection number of Lubin-Tate spaces, which is a local analogue of the Gross-Zagier formula. We will introduce the known results for the linear Arithmetic Fundamental Lemma, and the intersection number formula for Lubin—Tate spaces. After a joint work with Ben Howard, we also discovered a bi-quadratic generalization of the conjecture.