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*Mean-periodicity and zeta functions*

The general admitted expectation is that the right objects parametrizing L-functions are automorphic representations. In a joint work with Ivan Fesenko and Masatoshi Suzuki, it is suggested that the right objects parametrizing Hasse zeta functions of arithmetic schemes are mean-periodic functions over the real line, which have at most polynomial growth. Such Hasse zeta functions are conjecturally ratios of L-functions. The traditional method to prove the expected analytic properties of such Hasse zeta functions is to prove automorphic properties of each of the conjectural L-functions factors, which is not entirely satisfactory. It is shown in this work that establishing the expected analytic properties of these zeta functions boils down to proving the mean-periodicity of some explicit functions on the real line. This talk will focus on the models of zeta functions of elliptic curves.