



THE UNIVERSITY  
*of* NORTH CAROLINA  
at CHAPEL HILL

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## Mathematics Colloquium

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### Algebraic cycles on Shimura varieties and L-functions

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**Abstract.** This will be an introductory talk to conjectures on algebraic cycles on varieties over number fields and their relation to L-functions, viewed as a version of the “local-to-global principle”. We will emphasize the case of Shimura varieties that admit a natural collection of algebraic cycles, where there are various higher dimensional generalization of the Gross-Zagier formula for Shimura curves. We will indicate a few applications to some seemingly unrelated arithmetic and geometric questions.