L^2-EISENSTEIN COHOMOLOGY

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ABSTRACT: We give a spectral interpretation of automorphic L-functions by defining what we call L^2-Eisenstein cohomology. Roughly speaking, L^2-Eisenstein cohomology is the Fourier-Eisenstein transform of Eisenstein cohomology for a reductive group over a number field developed by G. Harder and others. This cohomology is a complex Hilbert space, on which one can construct canonically an operator whose spectrum captures the non-trivial zeros of the automorphic L-function associated to the automorphic representation. Major ingredients of the construction are the functional equation of Eisenstein series and the Fourier-Eisenstein transform (i.e. the Selberg-Langlands spectral decomposition) combined with some notions from operator model theory.

In the talk we will also very briefly touch upon the relation of our construction with local and global Langlands correspondence.