

## *Zeta functions related to the Selberg trace formula and their applications*

### Abstract:

The main body of my talk is based on my 3 preprints in arXiv written together with PhD student Arash Momeni.

1) An application of Jacquet-Langlands correspondence to transfer operators for geodesic flows on Riemann surfaces. arXiv:0808.2002 (2008)

2) Mayer transfer operator approach to the Selberg zeta function. arXiv:1008.4229 (2010)

3) Zeta functions and regularized determinants related to the Selberg trace formula. arXiv:1108.5659 (2011),

and the subject you can see more or less from these titles.

In the second part of the talk for an inspiration of the audience I will mention at the introductory level two remarkable subjects which are connected to modular forms and zeta functions.

1) The volume conjecture for 3-dimensional hyperbolic knots.

2) A description in terms of the Rademacher series of the model of 3 dimensional quantum gravity, which is related to the Monster vertex operator algebra (in the spirit of Igor Frenkel).