1134-35-46 **Viktoria Savatorova*** (viktoria.savatorova@unlv.edu) and **Aleksei Talonov** (alextalonov@gmail.com).

*Wave propagation in heterogeneous media with cracks: high- and low frequency approximations.*

We study acoustic wave propagation in pre-loaded heterogeneous media with isolated, randomly oriented cracks. The concentration of cracks is distributed periodically. We suppose the existence of several length scales: the smallest microscale defining the characteristic size of cracks, the mesoscale defining the characteristic size of periodic distribution of heterogeneities, and the macroscale which can be defined as a global characteristic size. The low-frequency approximation assumes the situation where the wavelength exceeds the mesoscale's characteristic size. The high frequency approximation implies the same order of magnitude for these two characteristic lengths. For low-frequency and high-frequency cases we propose multiple scales approaches which allow us to derive expressions for displacements and velocities of waves and study how these quantities can be influenced by external stress, wave's frequency and the direction of propagation. For the high-frequency we can also derive wave dispersion. (Received July 18, 2017)