1145-35-833 **Viktoria Savatorova** (viktoria.savatorova@unlv.edu) and **Aleksei Talonov*** (aleksei.talonov@unlv.edu). *High-frequency homogenization for modeling acoustic waves propagation in multi-scale periodic media.* Preliminary report.

An asymptotic high-frequency homogenization procedure is developed for acoustic waves propagation in multi-scale periodic heterogeneous medium. There are several characteristic length scales in our model. The medium consists of representative elementary volumes (REVs) repeating themselves periodically. Each REV has its own periodic structure of smaller blocks of heterogeneous materials. The smallest spatial scale is the size of a heterogeneity that is a miscrocrack or a micropore. The wave length exceeds the size of particular heterogeneity and the size of a block of heterogeneities, but it has the same order of magnitude as the REV. Resulting homogenized equations are deduced explicitly dependent on the macroscale with micro- and mesoscale represented by integral quantities. Dispersion relation has been derived for the case of one-dimensional periodic medium. Its solution reveals waves' attenuation and indicates that due to peculiarities of structure on micro and mezo levels some frequencies of waves can be forbidden from propagating through the material. (Received September 15, 2018)