## KMI – Theory Seminar Tuesday, October 28, 2014 3:00 pm, KMI Science Symposia (ES-635)

## "Causal structures in various modified theories of gravity"

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## Abstract:

With the aims of solving dark energy/matter problems and/or quantizing gravity theory, various modified theories of gravity have been proposed. In most of such theories, however, due to their nonlinearity, superluminal modes generically appear. It makes the causal structure nontrivial and often results in acausality.

In this talk, we will discuss about the causal structures in three modified gravity theories, massive gravity, generalized teleparallel gravity and Gauss-Bonnet gravity. The way of analysis is called "characteristic method", which is somehow classical but very strong analysis of causality based on the mathematical theorem "Cauchy Kovalevskaya theorem". I will briefly review the method and show its application to three theories.