Impact of commuting in epidemic invasion threshold DUYGU BAL-
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IN 47408, USA — Structured metapopulation models constitute one of the main
approaches to the modeling of epidemic spread. While the contagion dynamics in
each subpopulation is realized in a coarse-grained scheme, these models rely on the
integration of multi-layered mobility data and accurate representations of human
movements in different scales. Different scales are not just embedded in the spatial
component of the process (long-range versus short-range movements) but also in the
duration of the trips (long versus short visits). In this context, commuting, the daily
movement of people between home and workplace or home and school, is one of the
essential ingredients in multi-scale mobility networks. We consider an SIR-epidemic
in a metapopulation system whose subpopulations are coupled by commuting. We
investigate analytically and numerically the global epidemic invasion threshold.

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