

## Abstract:

In this talk we consider a transportation problem on a graph which specifies amounts of supplies and demands at nodes and routes for vehicles carrying commodities between two nodes as edges. The hardness of the problem depends on whether those amounts are given integers or not, which is referred to as Integer property. There are two models for transportation, one-way and two way. In one-way model a vehicle carries commodities from a node to a neighbor along an edge, and in two-way model it carries commodities from a node to a neighbor and then brings back other commodities from the neighbor to the node. From a computational point of view, it is important whether the loading capacity is bounded or not. One of the main problems is to decide whether there is a single round of trips that meet all demands using vehicles one at each node or one at each edge. We also consider some optimization criteria such as minimizing the largest unmet demand and the sum of unmet demands. In this talk we mainly consider one-commodity cases.