1116-VF-2724   **Sarvasva Raghuvanshi*** (`kepler1729@gmail.com`), 2944 Forest Creek Lane, Naperville, IL
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Social network-based companies like Twitter and Facebook rely on their ability to analyze large networks and exploit structures within these networks for profit. We can study these large networks by analyzing what structures we are guaranteed to find inside any large network with a minimum frequency; these small structures are known as *common graphs*. This presentation provides a modern proof of the existing result that a structure formed from disjoint copies of a common graph is also common. The method of proof yields novel partial results and poses new questions about the commonality of disjoint graphs. We also prove the commonality of the pentagon with a chord, resolving an outstanding open question in the field of graph commonality.

The work behind this research has applications to analysis of any large network (like a social network or the Internet) by paving the road towards identifying substructures that are high-value research targets. This paper also has applications to ecology and urban planning by identifying common habitat patterns (like a forest with two lakes, which can be modeled in a large graph by a pentagon with a chord). These specific habitats can be prioritized for development or preservation depending on their environmental impact. (Received September 22, 2015)