PS3 Q4

Main questions/objectives of the paper:

1. To analyse the usefulness of modularity optimisation as a method of detecting community modules in a network, and in particular, to demonstrate that there is a lower bound on the size of module that modularity optimisation can detect that depends on the number of edges in the network. (Eve Martin)
2. To analyse modularity and its applicability to community detection. (Zhichun Cao)

Main findings:

1. The discovery of limit to the sizes of modules that are recognized by modularity optimisation. (Eve Martin)
2. Modules smaller than a certain scale could not be resolved by modularity optimisation, mostly occurred for modules with a number of internal links of the order of or smaller. (Zhichun Cao)
3. Merging smaller communities to be a large module. (Xingyue Huang)

Strength:

1. The measure may be able to check whether a module is two modules mistaken for one by running modularity optimisation in that module only. (Eve Martin)

Limitation:

1. It is vague to say that “carefully examine each module after detection” without providing any method. (Xingyue Huang)
2. One of the methods they use is to carry out modularity-based community detection again on the detected subgraph, which is not mathematically well-justified. (Xingyue Huang)
3. There is no test resolution limits under different quality functions. (Zhichun Cao)