December 9: Salim Ali Altuğ (Columbia), *Arthur-Selberg trace formula and related problems.*

I will report on recent research on the Arthur-Selberg trace formula, for $GL(2)$, which is mainly motivated by investigating Langlands (relatively) recent proposal "Beyond Endoscopy." I will discuss how the contribution of non-tempered terms as well as certain particular contributions from the continuous spectrum can be isolated in the geometric side, which then allows one to rewrite the trace formula in a form that is suitable for non-comparative analytic applications. I will then describe applications of this formula to beyond endoscopy. If time permits I will also talk about certain recent questions raised by Arthur, which are motivated by the above analysis, as well as various recent arithmetic applications of similar lines of ideas.