MOM 29th June 2025

Attendees- Aaditya, Prithvi, Siddhaarth, Rachana, Asim, Shrey

Agenda – Discuss doubts from introductory papers sent on the group, and goal for the upcoming months.

Current state of the project - We have 2 suspensions and the final goal would be to create a fabry-perot cavity, where we actively control the sidebands and achieve the resonance state. What we did last year – one of the roadblocks in a project like this is acquiring components, designing the circuitry, etc. We purchased cables, finished up soldering work, etc. In the mean-time that the electronics arrived, we focused our attention on other stuff like modelling cavities and mechanical modelling of suspensions to determine natural frequencies.

Next semester’s main goal – **The main goal for next semester would be to achieve suspension control for one of the suspensions.** It could be done via PCIe cards programmed in LabVIEW or via Red Pitaya (data acquisition tool which was suggested to us initially by IUCAA) or Arduino. Each of them has their own problems – Red Pitaya is expensive and has only 2 channels which can however be multiplexed to get more channels at the cost of sacrificing sampling rate. LabVIEW being programmed in windows leads to actuation delays because LabVIEW runs on windows, and windows is not a real-time operating system. Currently, I (Aaditya) am working on setting up an interface between the OSEM board and the LabVIEW on the host computer called desktop ETS which would have a real-time operating system to minimize the actuation delays. However, this technology is old and there are a lot of compatibility issues. We need to talk to Suresh sir once he is back from the US about what is most feasible.