

SWG/OWG Discussion Session on Low Frequency Suspension Noise - Introduction

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- **Recent report from Adv LIGO Systems Preliminary Design Review**

“There is a lack of experience operating mirror suspensions at the low-frequency, low noise performance intended for AdLIGO.....

.....It should be possible to further reduce risk by formulating and carrying out a program of investigations into potential sources of noise at low frequency. Examples of problems that may require investigation include

up-conversion, glitches and charging.”

**Such investigations are difficult, and not model independent:
research needs be targeted on tractable problems**

- **Up-conversion:** Experience with ELIGO following replacement of magnets may give us further info on this noise source
- **Glitches:** Borja Sorazu (Glasgow) is studying data from GEO* to investigate glitches. He should be able to report in the next month or two.
- **Charging:** Gregg Harry is chairing the charging group – several avenues are being investigated for mitigating charging effects
- **Other sources of noise?**

* Can GEO give further info? GEO was not designed for good performance in the 10's of Hz region. There are several orders of mag. between where GEO lies and the projected Adv LIGO sensitivity. A look at the noise projections in this region indicates the difficulties of any extrapolation to see what lies below.