CSWG Workshop
Approximate Agenda (we can be flexible)

- 9:00 am Goals & Agenda

- ***Angular Control Issues***
  9:10 am LIGO Angular Control Issues
  * LIGO
  - review recent angular control noise talks
  - define/discuss problem
  - what is known, unknown?
  - what models, data, tools exist?
  10:10 break
  10:30 am GEO Angular Control Issues
  11:00 am VIRGO Angular Control Issues
  11:30 am wrap up discussion on angular control issues

- 12:00 break for lunch (not catered --> on your own)

- *** Hierarchical Control Design***
  1:30 pm LIGO: Particle Swarm Optimization (PSO) applied to the DARM hierarchical loop design
  2:00 pm GEO Hierarchical Control Design
  2:30 pm VIRGO Hierarchical Control Design
  3:00 pm wrap up discussion on Hierarchical Control Design

- 3:30 pm other issues/topics?

Workshop Focus Areas

- Workshop Goals/Aims
  - Brainstorming
  - Define problems
  - Review attempted solutions to date
  - Postulate promising approaches
- Topics
  - Angular Control
  - Feedback optimization
  - … but we can discuss other controls issues/concerns if/as time allows

LIGO Angular Control Issues

- Lots of control noise (cHard/dHard) (10-30 Hz)
- Excess (not shot or electronics) sensing noise in WFS (8-25 Hz)
- Extra disturbance from L2A (0.1-3 Hz)
- Funny loop shapes (0.5-2 Hz)?? (what does this mean? Why care?)
- Loops ~unstable during power up?? (even with the large phase margin?)
- Poor sensing of some DOFs - different between sites – which DOFs?
- Plant changes
  - Drift with heating, time -- ~45 min to stabilize – how much drift?
  - Does Guardian coordinate control law switching? Or do we have a single control law for all power levels?
  - Can we switch control laws without losing lock?
  - Discrete changes upon locking?
  - Disturbance spectra for power fluctuations?
- Performance requirements? (control bw, transient event rejection, etc)
- Unobserved DOF (i.e. not all mirror angles sensed)