

16 Aug 2012

C+M LIGOS

2 double
Paul's implant → Provide seis noise filter for passing white
shot & seis noise. → Implant has optics, mechanics, electronics.
single pole 'plant'

gets feedback, does sys id to figure out plant

self-design optimal controller

↳ based on criteria

↳ don't screw up noise above thermal noise
↳ etc. convergence time, accuracy.

what
changes?

→ shared testplant, head-to-head comparison of methods.

add dof's over time, then have machine figure out cross-couplings.
↳ esp low freq stuff where loop gain is high, hard to measure DF.

Cost Function

↳ differential motion sensed by main laser
↳ use something simpler to start.

Kari's classification
method - SPR?

Find patterns in lock losses

↳ give sensor data to Reinforcement Learning.

→ put on ML, or Arms.

→ model is only for some setup, must look @ real thing.

Switch states automatically
↳ use Masha's classification.

(pre-define various control states → Brett's thesis has some of these)

ex PD w/ good resolution, low dynamic range

↳ if EQ, PD saturates.

→ So, switch to PD w/ better dyn range, lower gain.

→ Keep thermal state of IFO same, so we can return quickly to science mode.

confidence
happened,

→ Maybe use USGS seismometers for EQ triggers. Jan almost has method for getting data in realtime.

Figure out min. set of signals which tell you what's

what's
happening

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Brett's views/notes on ACC conf.

/// Kalman filters for sensor blending

↳ SEI guys? ↳ taking into account diff sensor noises.
↳ make total better sensor.

Adaptive integral control

Sensor faults → when is a sensor bad?

→ fill in missing sensors w/ estimators?

↳ integrators w/ pole @ 0Hz may not have a lot of phase margin. Have variable gain so you can have robust system when needed, go to low noise @ other times.