For discussion

- Hot spot temperature
  - Which is the maximum temperature that we can assume for the design of the quench heaters (from 150 to 400 K)
  - Which experiments can we perform to define it ?
    - Instrumented quenches that give access to local temperature and verify degradation
    - Analytical techniques to trace the damage mechanisms
  - Such an experiment (or experiments ?) would be an ideal test bed for design and simulation codes
  - This applies to all brittle materials (Nb_3Sn and HTS)

A team to design an ideal experiment

For discussion

- On the other allowables
  - Temperature gradient ? Applies surely to HTS
  - Voltage criterion, and actual values for different coil (magnet) technology
- Experience on longer prototypes to extrapolate to final magnet configurations

For discussion

- Time scales and detection thresholds for design, test and operation
  - QPS limits, based on experience and extrapolation
  - Detection time lag and rejection (filtering) possibilities
- Quench initiation and propagation
  - Propagation speeds (longitudinal and transverse) and influence on detection time
  - Heater delays (power, time scale, waveform, …)
  - Block-to-block, layer-to-layer propagation

For discussion

- Heater technology
  - Power density and voltage allowables vs. speed
  - Thermal contact to the coil
  - Resistance to heat treatment
  - Heaters for coils with improved heat transfer
- Coil heat transport enhancement (bridges)

For discussion

- New detection techniques
  - New ideas seem to be far away from practice
  - Fibers are interesting: join the programs (as much as practical, e.g. Rayleigh, FBG, Brillouin ?) and drop the rest from the main line ?
- New protection techniques
  - Heaters are critical, explore alternatives and quench-back mechanisms
  - Subdivision ?