SN Round Table

- Participants: Daniel Holz, Michael Dine, Uros Seljak, Stan Brodsky, Reynald Pain, Alex Kim (scribe), Phillipe Brax (moderator)
Astrophysical Systematics

- SN evolution, dust, to a lesser extent gravitational lensing
  - Biggest concern of everyone
- Now evidence for host-dependent populations
- Room for subclasses to be hidden in already corrected intrinsic magnitude dispersion
- Deficiency in SN explosion modeling: data drives theory
- Nearby SNe provide a testing ground since host-environment and not $z$ evolution is relevant
Instrumentation

- High redshift needs infrared wavelengths
- Ground instrumentation limits redshift depth to $z \approx 1$
- SNAP was an instantiation of instrumentation that enabled the science
  - Euclid and JDEM-Omega do not
- What can we do from the ground first?
  - Need to find the easiest way to subclass SNe Ia with existing or feasible instrumentation – no good answers yet
New Efforts and Collaboration

- Light-curve fitter discrepancy is an analysis problem, not an astrophysics systematic.
- Problem resolved with experiments that generate spectral time series for a big SN set.
- Need experiments to identify subclasses to be exploited in next-generation experiments.
- Test homogeneity of dark energy: LSST SNe can be useful but are other probes better?
- LSST shallow survey not good for distances but OK for strong lens time delays with SNe.
Measurements From Other Probes

- Measure local peculiar velocity flows to make $z<0.05$ SN distances accessible
- High-redshift dust properties
- Strong lensing
  - Magnifying glass to the higher redshift universe
  - Construction of the lensing potential of massive clusters for strongly-lensed background supernovae