Highlights from Parallel Session P2 *Gravitational Waves*

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Gravitational Wave Observations

- **Sheila Rowan:"The Ground Based Gravitational Wave Observatory: from current to advanced**
  - **LIGO, VIRGO have completed science runs, data (being) analyzed**
  - **Now undergoing upgrades to advanced detectors, 10x more sensitive**
  - **Expect detections of NS/NS mergers ~ 2015/2016!**
- **Paul McNamara:"LISA and LISA Pathfinder“**
  - **Space-based LISA will observe milli-Hz GWs, very rich in sources**
  - **LISA Pathfinder (LPF) will test “drag free” flying, reduce risk for LISA**
  - **LPF under development, flight hardware being built → launch 2013**
- **Joris Verbiest: "Constraining Dipolar Gravitational Radiation through Pulsar Timing"**
  - **Detect nHz GWs via pulsar timing: GWs distort time-of-arrival of pulses**
  - **International pulsar timing arrays in progress, taking data**
  - **Constrain alternate theories → especially show absence of dipolar GW**
- **Curt Cutler:"Cosmology with 300,000 Standard Sirens“**
  - **Decigo/BBO: space-based mission, detect GWs from inflation, deci-Hz**
  - **Observe “foreground” compact binaries, measure H_0 to ~ 0.1%, dark energy parameters**

Gravitational Wave Sources

- **Bernard Schutz: "Black Hole Physics with Gravitational Waves“ (review)**
  - **BHs are key source for ground-based detectors (stellar) & LISA (MBHs)**
  - **Measure masses, spins of BHs in mergers; Test General Relativity**
- **Konstantinos Kokkotas:"High Frequency GW Sources“ (review)**
  - **GWs from NS oscillations → NS structure, equation of state**
  - **GWs from SNe: generated by core collapse dynamics, broad spectrum**
- **Andrew Penner:"Gravitational Waves from Rotating Deformed Stars“**
  - **Numerical simulations of NS oscillations, under development**
- **Kei Kotake:"Gravitational-wave signatures in successful and failed core-collapse supernova explosions“**
  - **3-D numerical simulations of core-collapse Sne and GWs produced**
- **Sambaran Banerjee:"Stellar mass black holes in star clusters: gravitational waves and 'dark remnants'“**
  - **Numerical simulations of stellar dynamics in globular clusters, calculate GWs produced**