Take Away Messages

• Gravitational wave data will be a part of astronomical toolbox in the next 5 years

• The spectral coverage will expand to other wavebands over the next decade and more

• Space-based GW community is active; technology and science are moving forward
Advanced LIGO

- Last iLIGO science run (S6) concluded in October 2010
- The interferometers have been being upgraded since then
- First interferometer lock (arms brought into resonance) for aLIGO was made in Livingston on 14 May 2014
Advanced LIGO

- Sensitivity at Livingston is already better than the last iLIGO run

- Range sensitivity to binary NS mergers is about 25 Mpc (goal is 200 Mpc at full sensitivity)

- First detections expected before the end of the decade
Pulsar Timing

- Pulsar timing arrays are growing and becoming more sensitive

- Detections at nanohertz frequencies are also likely before the end of the decade

Siemens et al., CQG (2013)
LISA Pathfinder

- Pathfinder is moving steadily forward; launch scheduled for July 2015
- Launch schedule stable for more than 1 year now!
- Core LISA technology demonstration
  - Drag Free Control, Microthrusters, using both European system and US ST-7
  - Interferometry
  - Noise Stability
L3 (eLISA)

- “The Gravitational Universe” was selected as the theme for L3
- eLISA is the leading mission concept; selection near end of the decade
- Technology development is ongoing in both Europe and US
  - Phase meter, laser metrology
  - Telesocpe design
  - UV LED charge control
  - DRS testing and systems
US LISA Community

- Organized around the GW-SIG
- Working with European colleagues on many fronts, including Pathfinder and technology development
- Worked on US led study to identify technology gaps
- Now preparing for the upcoming decadal survey
- GRACE Follow-on is on track; will demonstrate LISA compatible technologies
LISA Symposium X

- Gainesville, May 2014
- 150 scientists from Europe and US
- 100 Scientific Presentations
  - Pathfinder
  - Science
  - Technology
- Next Symposium (after Pathfinder!)
  Zurich, 2016
Special Session
Thursday, 10:30am
402: THE GRAVITATIONAL UNIVERSE
Huron

THANKS!