



Welcome to ....



# *THE PHYSICS OF DE SITTER SPACETIME*



**Bruce Allen**

Max Planck Institute for Gravitational Physics  
(Albert Einstein Institute, AEI)





# Albert Einstein Institute founded 1995

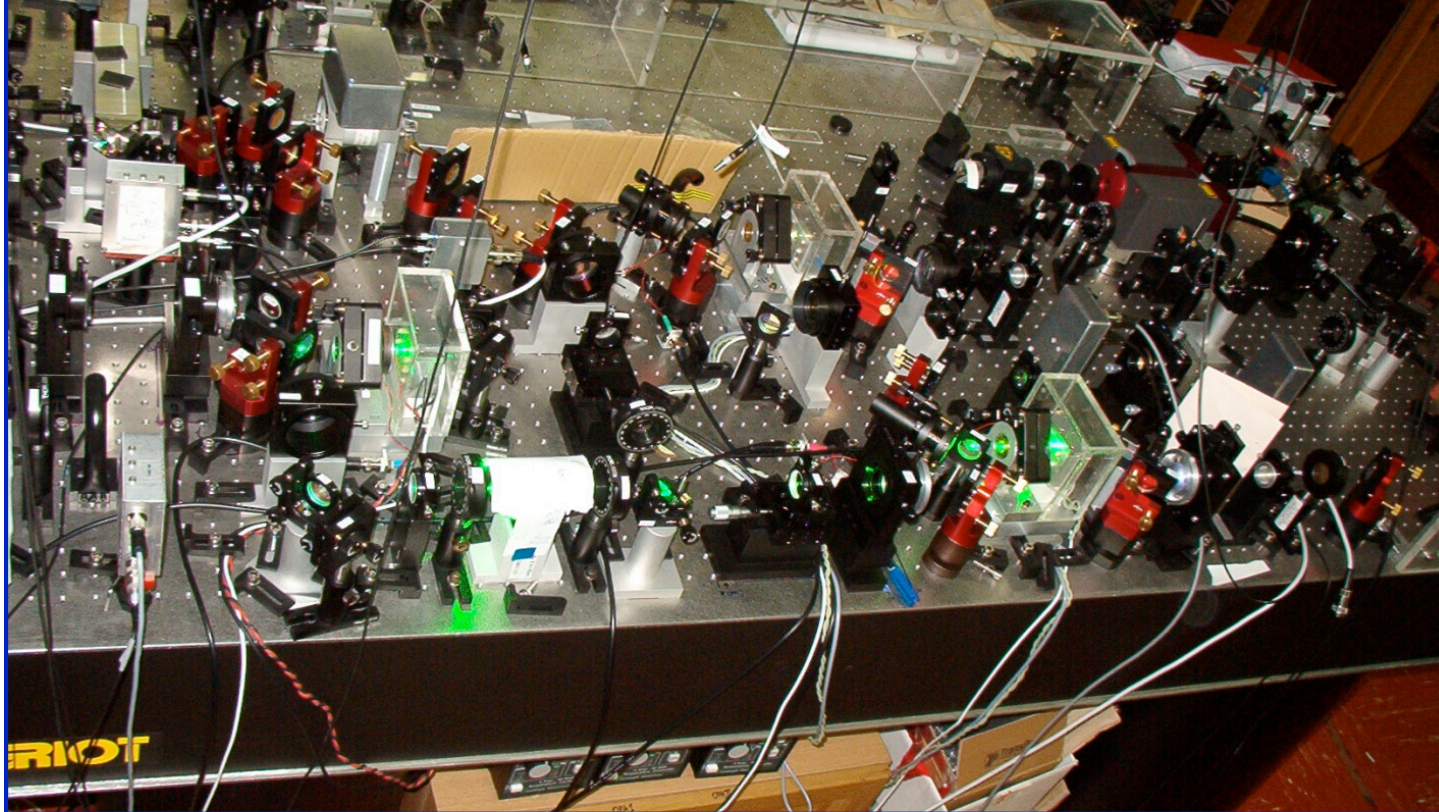
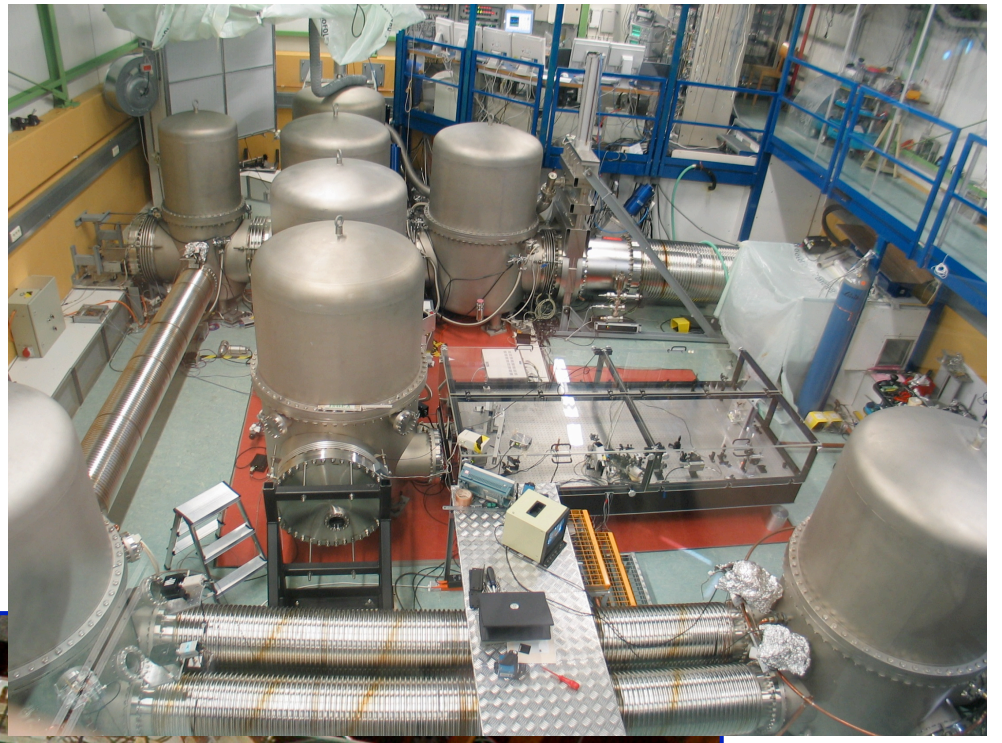


- All of gravity under one roof: classical, quantum, experimental, observational
  - About 350 scientists, students, staff
  - Core funding: Max Planck Society
  - Half near Berlin (3 divisions, **Huisken**, **Nicolai**, **Schutz**) focus more theoretical
  - Half in Hannover (2 divisions, **Allen**, **Danzmann**) focus more on the experimental aspects
- AEI Hannover
  - Cooperative effort between Max Planck Society, Leibniz University Hannover (LUH) and State of Niedersachsen

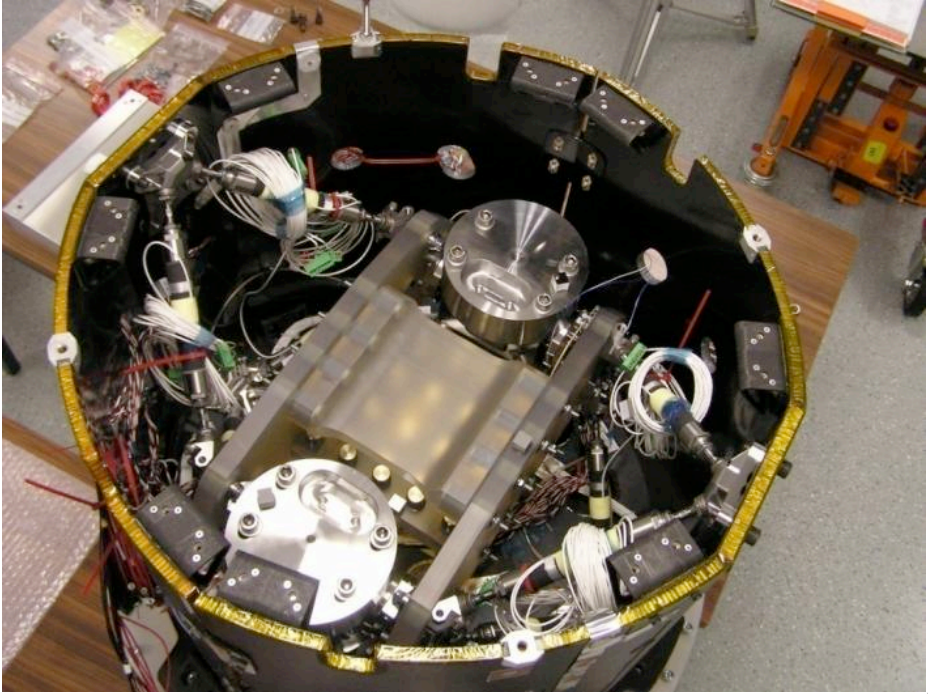
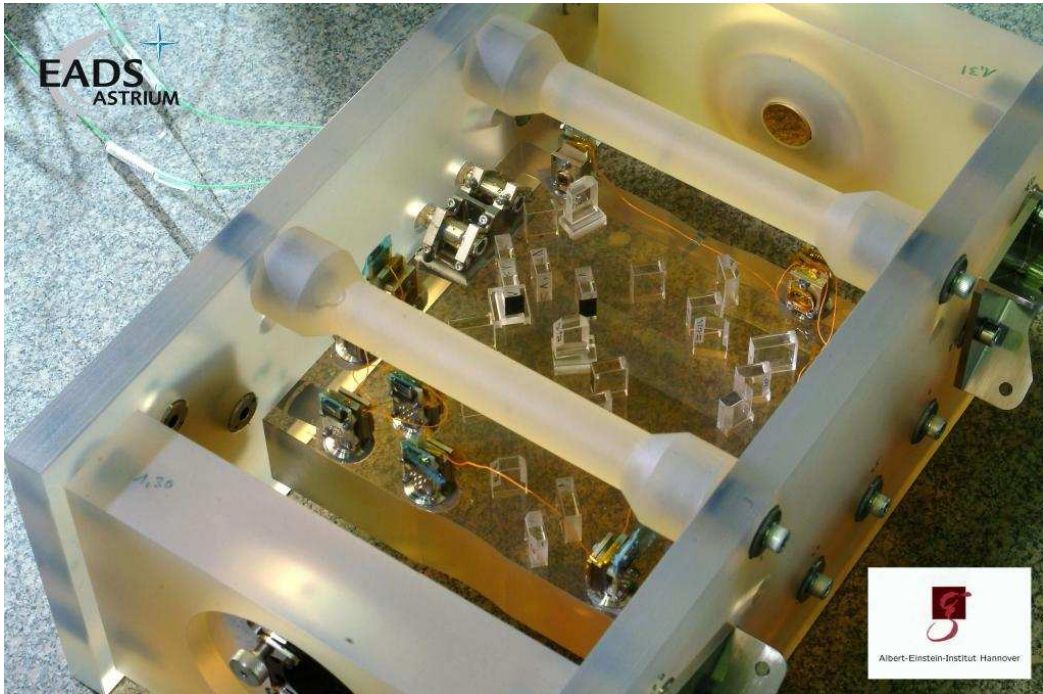
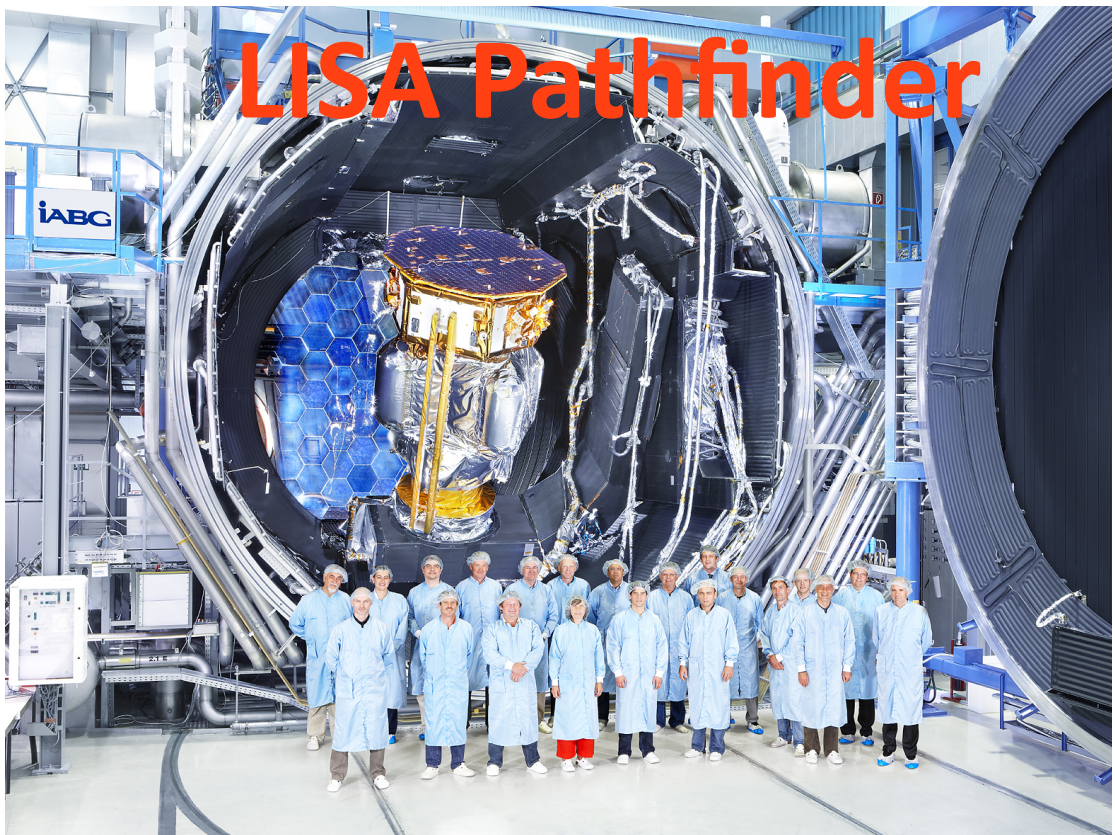




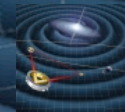
# GEO600



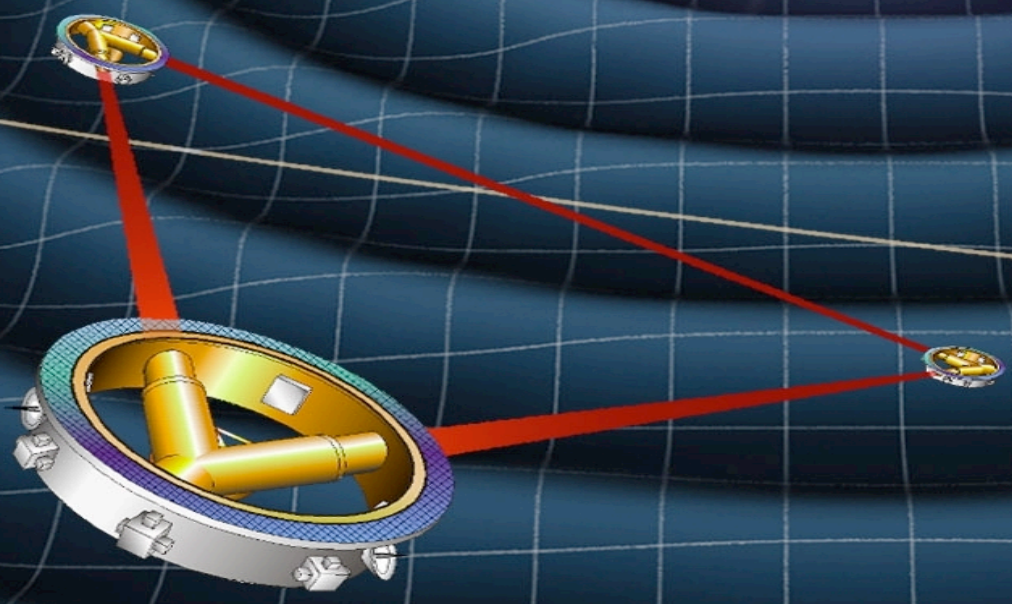








# Laser Interferometer Space Antenna





LIGO Hanford (USA)



GEO600 operated by AEI



LIGO Livingston (USA)



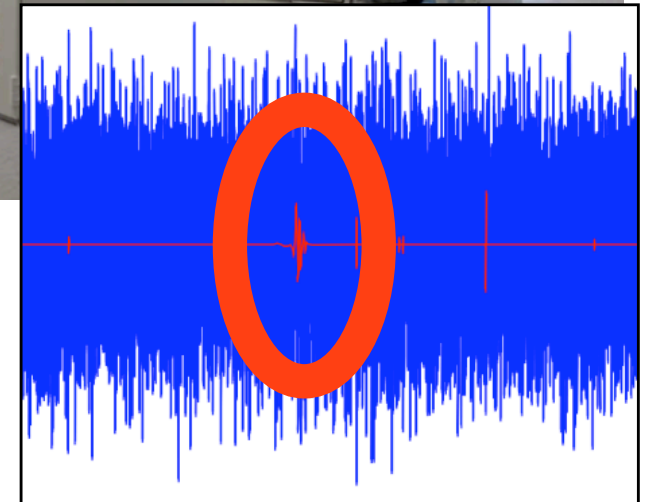
VIRGO (Pisa)



# Largest Dedicated Computer Cluster in the World for GW Data Analysis at AEI



Currently expanding from 500 kW to 1 MW



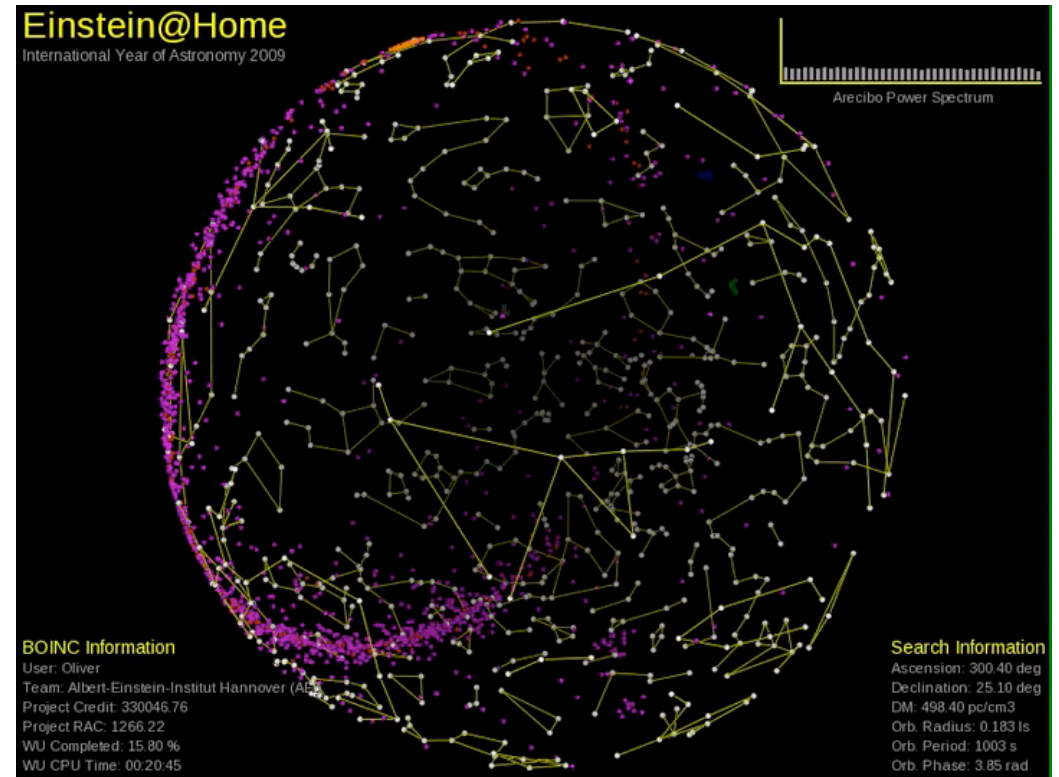




# Einstein@Home

The screenshot shows the Einstein@Home website in a browser window. The URL is <http://einstein.phys.uwm.edu/>. The page features a navigation menu with categories like 'Most Visited', 'D-verbs', 'LEO', 'News', 'SFB', 'E@H', 'BOINC', 'UWM', 'ECRT', 'LIGO', 'Germany', 'Travel', 'OpenWRT', 'Network', 'MPG/LUH', and 'SMART'. Below the navigation is a banner for 'EINSTEIN@HOME Catch a Wave From Space' with logos for LIGO and BOINC. The main content area includes an 'About Einstein@Home' section, a 'User of the day' section, and a 'News' section with several articles. The 'News' section includes:
 

- Arecibo binary pulsar re-discoveries page updated**: The latest radio pulsar re-discoveries are available at the usual place. Our count is now at 2 observations of 1 NEW pulsar; 242 detections of 123 different known radio pulsars, including 20 re-observations of 8 different millisecond pulsars. Thank you very much volunteers! (27 Aug 2010 13:40:17 UTC - Comment)
- First Einstein@Home Discovery!**: We are delighted to announce that Einstein@Home has made its first discovery: a radio pulsar, found in data from the Arecibo Observatory in Puerto Rico. Details are available in a paper published online by Science today. Science has given us permission to post a copy of the abstract and paper here. They are also on the Science website here. The manuscript is also in the arXiv preprint archive (use the PDF link in the top right corner). A press-conference webcast about this first discovery is also available. The name of the pulsar is PSR J2007+2722. It is a 40.8 Hz isolated pulsar, 17,000 light years distant in the plane of the Galaxy, and is most likely a Disrupted Recycled Pulsar (DRP). If so, it is the fastest DRP yet discovered. The Einstein@Home volunteers whose computers found the pulsar with the highest significance are Chris and Helen Calvin, from Ames Sowa and Daniel Gebhardt, Muskegonformatik, Universität Mainz. Additional information about the discovery is available on our web pages. I will also talk about it at the London Citizen Cyberscience Summit on September 2nd. We thank ALL Einstein@Home volunteers for their support, and look forward eagerly to our next discovery. (12 Aug 2010 18:01:58 UTC - Comment August 12, 2010)
- Arecibo pulsar re-discovery count passes 200!**: In its analysis of radio data from the Arecibo Observatory, Einstein@Home has now passed its 200th re-detection! The 116 different radio pulsars that have been re-detected include 8 millisecond pulsars. More details may be found on the radio pulsar re-discovery page. (11 Jul 2010 15:18:08 UTC - Comment)
- Arecibo binary pulsar re-discoveries updated**: The latest radio pulsar re-discoveries are available at the usual place. Our count is now at 172 detections of 103 different known radio pulsars, including 16 re-observations of 7 different millisecond pulsars. Thanks to our volunteers! (13 Jun 2010 14:51:34 UTC - Comment)
- June 13 Network Outage**: Einstein@Home will be down for 20 hours on June 13 from 0300 to 2300 UTC. The entire University of Wisconsin - Milwaukee network will be down for upgrades at this time. (9 Jun 2010 4:46:38 UTC - Comment)



- Launched 2005
- More than 300K volunteers
- More than 100k computers contact servers each week asking for work.
- Currently 600 TFlop/s

- Searches LIGO data (gravitational waves)
- Arecibo and Parkes data (radio pulsars)
- Fermi satellite data (gamma-ray pulsars)
- Has discovered (more than) 50 new pulsars in radio data





# de Sitter space



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**Rai Weiss**





# de Sitter “inspired”



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