

Report on EU ET meeting 2017 in Mallorca

Program

Online [program](#). Slides should be available soon as well.

There was lots of interest in both making the ET more visible and in how to interact with LIGO, pointed to working [group discussion](#) from NCSA workshop. European ET users are trying for a COST proposal which would fund travel and collaboration between institutions (couple 100k EUR spread over many institutions so the money is not huge but it would show funding and be a stepping stone for further funding). Interest by LIGO personel (Patricia Schmidt Radboud University, Netherlands and Gerraint Pratten at Universitat de les Illes Balears, Spain) interested in this. Helvi Vitek (Barcelona) and Miguel Zilhao (Instituto Superior Técnico, Portugal) will make there scalar (+ procca) filed code public. They are already in contact with Erik Schnetter.

Initial discussions

- want to focus on new science with LIGO but need more automation in ET for this
- multiple groups interested in non-compact object science / no GW science
- could incorporate PHAROS + COMPOSE data format for EOS in EOS_Omni which is a collaboration to provide EOS tables
- apparently theoretical work on EOS using better QCD methods close to changing the currently available EOS significantly

Discussion on working group:

- lead by Gabrielle, should have notes from Bruno Giacomazzo eventually.

Wednesday October 11th

11.00	<p>Andrea Endrizzi</p> <p><i>General relativistic magnetohydrodynamic simulations of binary neutron star mergers forming a long-lived neutron star</i></p> <p>Different EOS looked mostly at end-state of simulations and winds, would be interesting to see if neutrinos drive winds of similar strength than what he observed from MHD simulations.</p>
11.30	<p>Jens F. Mahlmann</p> <p><i>Blandford/Znajek process in dynamically evolving spacetimes</i></p> <p>Uses force free code to simulate process in Cowling approximation. Compares some results to GiRAFFE but has two different methods. Currently looking for useful initial data, pointed to Sam Gralla's work.</p>
12.00	<p>Charalampos Markakis</p> <p><i>Conservation laws and evolution schemes in geodesic, hydrodynamic and magnetohydrodynamic flows</i></p>
14.30	<p>Steve Brandt</p> <p><i>Scheduling and Synchronization, using Read/Write Directives in Cactus</i></p> <p>Steve gave an introduction about the current preSYNC status and what one can do with it, it can automate SYNC statements in the schedule and can (to some extent) ensure that only variables that one claims to access are actually accessed.</p>
15.00	<p>Patricia Schmidt</p> <p><i>Numerical Relativity infrastructure for data analysis in the Advanced era</i></p> <p>Patricia gave an intro to the LIGO NR waveform infrastructure and format. Interestingly the use of ROMSPLINE is apparently not mandatory.</p>

15.30	<p>Geraint Pratten</p> <p><i>Phenomenological Waveform Models and Numerical Relativity</i></p> <p>Geraint reported on the next generation PhenomX waveform model which is obtained from EOB waveforms hybridized with NR waveforms.</p>
16.30-18.30	<p><i>Discussion: The Einstein Toolkit in the GW-astronomy era</i></p>

Thursday October 12

9.00	<p>Ruxandra Bondarescu</p> <p><i>Boson Stars</i></p> <p>Gave introduction to her work on Boson stars that she already reported on while visiting here. So far it is a single boson star with ID provided by the elliptic solver in in Cactus.</p>
9.30	<p>Miguel Zilhao</p> <p><i>Bosonic fields around black holes – part 1/2</i></p> <p>More bosonic fields, this time procca fields and their evolutions.</p>
10.00	<p>Helvi Witek</p> <p><i>Bosonic fields around black holes – part 2/2</i></p> <p>More bosonic fields, this time procca fields and their evolutions. Code can be coupled to ET codes, currently tested with Lean code.</p>
11.00	<p>Hisaaki Shinkai</p> <p><i>Nonlinear Dynamics in the Gauss-Bonnet gravity</i></p> <p>Higher dimensional N+1 gravity.</p>
11.30	<p>Oleg Zaslavskii</p> <p><i>High energy particle collisions near black holes and singularities and super-Penrose process</i></p> <p>Just what it says. I have never (and still don't) understand if this is actually something that one expects to observe once the colliding particles have climbed out from just above the event horizon where the collision happened.</p>
12.00	<p>Mihai Bondarescu</p> <p><i>General Relativity as a Tool for Earth and Planetary Science</i></p> <p>Using GR on Earth to detect (via gravity and time effects) masses in the Earth (eg oil fields, magma chambers).</p>
14.00	<p>Roland Haas</p> <p><i>HydroOpenMPToy, a from scratch, minimal hydro code</i></p>
14.30	<p><i>Discussion: current open issues in the Einstein Toolkit</i></p>
16.30-18.30	<p>Parallel discussion and working groups</p>

Friday October 13

9.00	<i>Discussion: running the Einstein Toolkit on current and future EU platforms</i> Not much of interest for us. Maybe interesting in that two persons from the Barcelona Supercomputing center were present (one was a guest at NCSA and in one of our group meetings once).
11.00	<i>Discussion: structuring the Einstein Toolkit with Working Groups</i> Gabrielle reported on the setup of working groups in the ET and how to involve people.
14.30–16.30	Funding Opportunities in Europe to support the Einstein Toolkit