Brazilian Einstein Telescope Synergy (BETS)

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IFT-UNESP/ICTP-SAIFR, PPGCosmo-UFES, UFF, UFRJ

May 10th, 2023 – ET Collaboration Board

New Brazilian Research Unit: Summary

Made of 4 staff researchers (+4 among PD and PhDs) at 4 Universities in the South-East of Brazil.
Mainly expertise in Cosmology and Theoretical Gravity (no hardware)
https://wiki.et-gw.eu/OSB/ Div1,2,7.

Main common interest is cosmology with standard sirens (Div2): simulate ET data to constrain the cosmic expansion history with *dark* standard sirens, in synergy with the Large Synoptic Survey Telescope LSST by using its galaxy catalogs, and including effects of peculiar velocities and lensing.
Additional work on waveform development, by including analytic description effects of memory and absorption via EFT methods (Div1), most likely not detectable by 2G observatories, and using neutron stars both isolated and in binary systems to make tests of General Relativity (Div7).

IFT-UNESP/ICTP-SAIFR: São Paulo
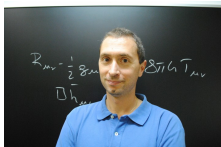
Riccardo Sturani 0.3 - Researcher

Improve wf model to detect exotic GR effects (memory/absorption).

Dark Standard sirens measure of cosmological parameters, effects of catalog completeness.

Isabela Santiago de Matos 0.4 - 1st year Postdoc

Ongoing application to join Brazilian-LSST, answer expected by Aug 2023
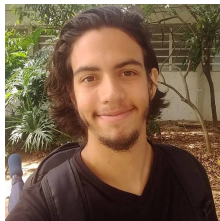
UFES: Vitória

Valerio Marra 0.1 - Professor

Combine 3G data with LSST galaxy catalogs.
Test the importance of host properties (mass, metallicity) in identifying appropriate redshift.

Infer cosmological parameters via dark siren methods, results include bias forecast from ignorance of the astrophysical population properties of GW events.

Ranier Menote 0.5 - 1st year Phd Student

UFF: Rio de Janeiro

Raissa Mendes 0.2 - Professor

Focus on fundamental physics and neutron star equation of state and stellar collapse of isolated neutron stars.
Use neutron star observation for GR tests.

Investigate neutron star properties in modified theories of gravity.

Amanda Guerrieri 0.5 - 1st year PhD student

Miguel Quartin 0.2 - Professor

Statistical tests combining GW observation and galaxy catalogs to map peculiar velocity effects and cross-correlate with density spectrum/lensing information from galaxy surveys.

Testing how GW peculiar velocity inference is impacted when using dark sirens.

Tatiane De Paula Moraes 0.5 - 1st year PhD student