

# The Einstein toolkit on SUMA systems.

*Thursday, 12 February 2015 16:50 (20 minutes)*

Recent progress on Numerical Relativity and General Relativistic Magneto Hydrodynamics (GRMHD) are opening new windows on our understanding of possible sources of Gravitational Waves (GWs) that would be detected in the coming years by the INFN gravitational wave observatory VIRGO. Unfortunately the power and memory required for cutting edge simulations with the desired accuracy require  $\sim 10$ PFlops and order of 1TBytes of RAM.

The SUMA project aims to study which one of the possible upcoming architecture will be suited to obtain in the near future the desired computational power that would made this simulations achievable. I will discuss scaling tests on the systems available to the SUMA collaboration of one of the leading tool for Numerical Relativity simulations, the Einstein toolkit. This tool implements multithread (OpenMP), multiprocessor (MPI) and mixed MPI+OpenMP parallelization techniques. These results show how does the Einstein toolkit perform on the current generation of supercomputers.

**Presenter:** BRAMBILLA, Michele (INFN)