



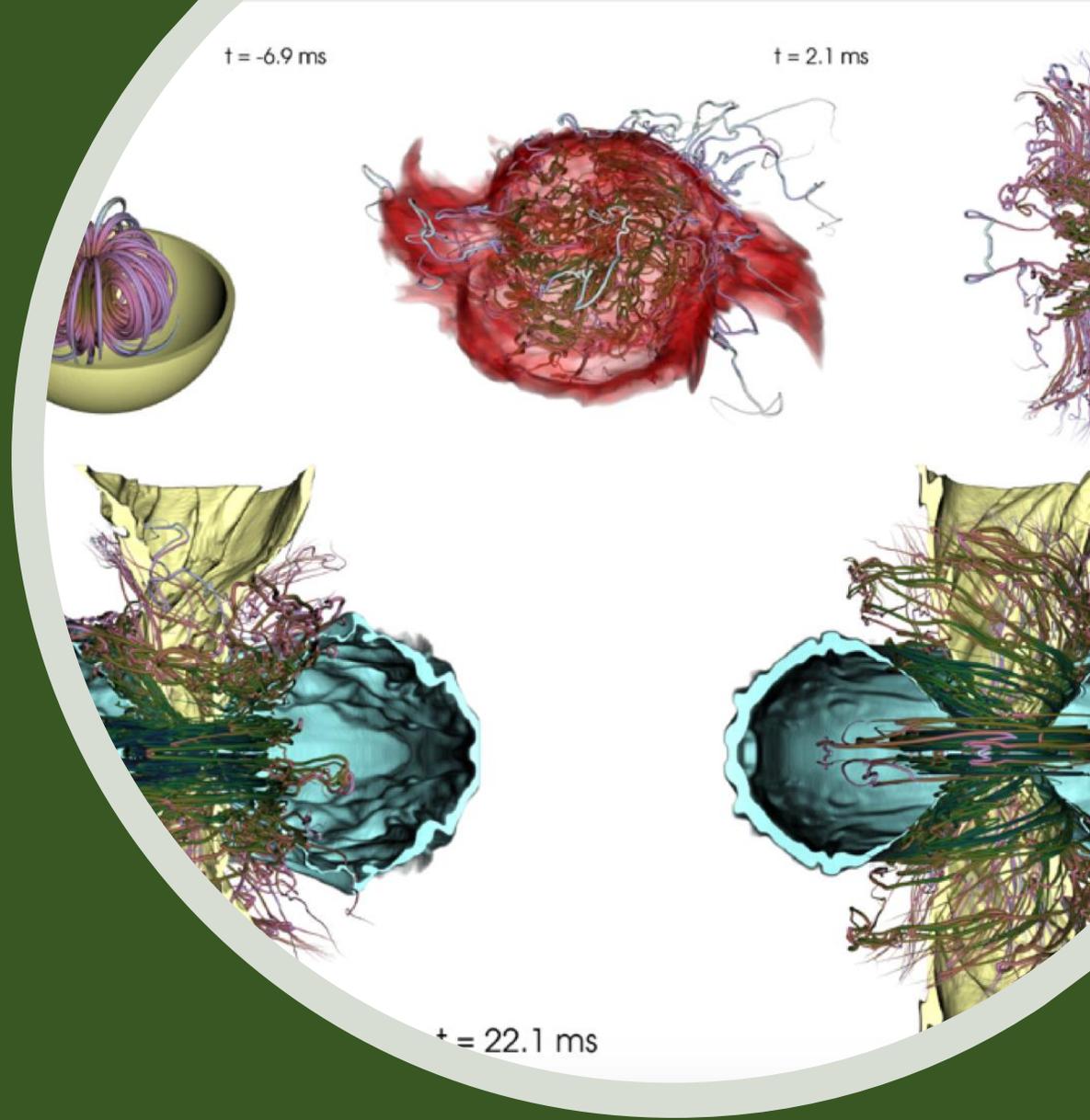
Spoke 2 – WP 4
Milano-Bicocca
(8 staff, 3 mesi/anno)

Bruno Giacomazzo

www.brunogiacomazzo.org

Astrofisica

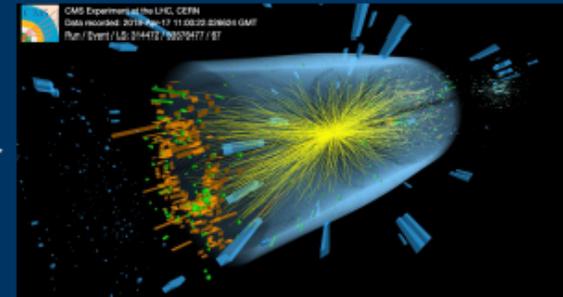
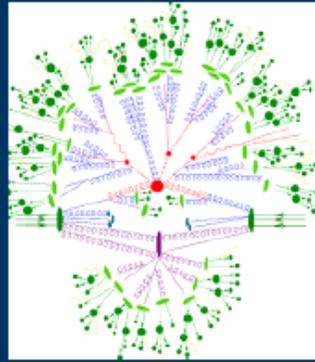
- Personale: B. Giacomazzo, A. Lupi, M. Dotti, A. Sesana, M. Colpi (2.3 mesi/anno)
- In sinergia con WP1 (sviluppo di codici numerici per lo studio di oggetti compatti)
- Porting di codici numerici (N-body, fluidodinamica, magneto-idrodinamica newtoniana e relativistica) su GPU
- Ottimizzazione sulle nuove infrastrutture HPC (CPU e GPU)
- Il progetto è in fase iniziale e in attesa della assunzione di un RTDA
- I codici numerici sono stati scritti da noi per piattaforme CPU (OpenMP+MPI). Per alcuni di essi esistono già collaborazioni esterne che saranno sfruttate per il porting su GPU. In altri casi il lavoro andrà fatto qui.



Boosting the computational performance of Theoretical Physics algorithms: porting of Monte Carlo event generators to GPUs and heterogenous architectures

Monte Carlo Generators are essential for physics analyses at the LHC and future colliders

The High-Lumi LHC computing strategy has identified the parallelization/porting of event generators to hardware accelerators as a key task.



POWHEG and GENEVA Monte Carlo codes developed in Bicocca are currently designed for CPU parallelization (MPI). They are well suited to parallelization on GPU: main computational cost (matrix element evaluation) can be reduced with massive parallelization, evaluating multiple phase-space points at the same time on a GPU

Project in early stages: requires rethinking current strategy of event-by-event generation in favor of parallel event generation.

PhD student and/or technical assistant with GPU experience required.

Personnel: S.Alioli, C.Oleari, E.Re (total WP1+WP4): SA=3 months , ER=3 months, CO=1 month (over 3 years)
WP1 75% WP4 25%