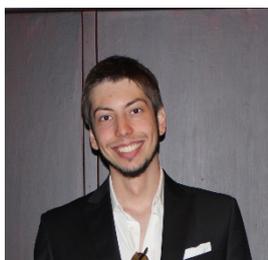# José Correia wins PRACE Best Poster Award @ EuroHPC Summit Week 2021
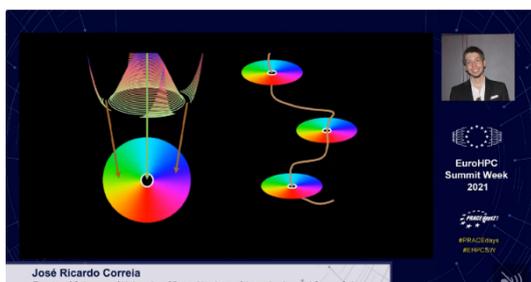

José Ricardo Correia

Keeping with tradition, PRACE has selected the winner of the PRACE Best Poster Award at PRACEdays21 during the EuroHPC Summit Week 2021 Digital from 22 to 26 March. The winner is José Ricardo Correia from the University of Porto for his poster presentation on "Coding the Cosmos: A New Generation of Superstring Simulations".

Also, this year's digitally held edition of PRACEdays21 at the EuroHPC Summit Week featured a rich and exciting poster session featuring a variety of HPC research projects — the session included short video presentations by the poster authors, which could be viewed all week on the event platform.

The 2021 PRACE Best Poster Award went to José Ricardo Correia, a PhD student in the group of Carlos Martins at the University of Porto and the Institute of Astrophysics and Space Sciences, for his poster and presentation entitled "Coding the Cosmos: A New Generation of Superstring Simulations".

 "It feels fantastic to have won this award", says José Correia. "I am happy that I was able to make a contribution to improve string simulations and thus help in future discoveries, as well as honoured and humbled that my efforts were recognised."

With Correia's new generation of simulations, the structure and position of cosmic strings can be examined in unprecedented detail. Cosmic strings are topological defects in space that are thought to have formed during phase transitions in the early universe. Their simulation is strongly limited by computing memory, both in terms of amount and bandwidth. Correia was able to overcome this bottleneck by using graphical accelerators. With his new multi-GPU simulations, it is now possible to study cosmic strings in a large box size and down to an unparalleled small scale. This way, the physicist could examine subtle string structures like kinks and loops, which, in turn, influence the cosmic strings' emission of radiation.

"Without HPC, these high-resolution simulations would not have been possible", Correia stresses. "The interplay between theory, observations and HPC will certainly become even more essential for future discoveries."

For Matej Praprotnik (former Chair of the PRACE Scientific Steering Committee 2020 – March 2021), member of the PRACE Poster Selection Committee, it is one of the essential missions of PRACE to promote such ground-breaking basic research using HPC that expands our fundamental understanding of how the universe works. "The scientific work presented in the winning poster goes exactly along these lines," states. "The presenter persuaded the panel with his enthusiastic and expert presentation of extensive computer simulations of cosmic strings. We hope that the Best Poster Award will serve as an inspiration for him for his future academic career."

About PRACE

The Partnership for Advanced Computing in Europe (PRACE) is an international non-profit association with its seat in Brussels. The PRACE Research Infrastructure provides a persistent world-class High-Performance Computing service for scientists and researchers from academia and industry in Europe. The computer systems and their operations accessible through PRACE are provided by five PRACE members (BSC representing Spain, CINECA representing Italy, ETH Zurich/CSCS representing Switzerland, GCS representing Germany and GENCI representing France). The Implementation Phase of PRACE receives funding from the EU's Horizon 2020 Research and Innovation Programme (2014-2020) under grant agreement 823767. For more information, see www.prace-ri.eu

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