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University Communiqué

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University of Tübingen is deputy coordinator of the new Helmholtz Astroparticle Physics Alliance

22 institutions join forces in a research consortium

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The new Helmholtz Alliance for Astroparticle Physics pools the expertise of the two KIT and DESY Helmholtz centers with that of 15 German universities, three Max Planck Institutes, the University of Chicago's Kavli Institute for Cosmological Physics and the Institut AstroParticule et Cosmologie in Paris. The KIT Karlsruhe has the main task of coordinating the consortium, with the University of Tübingen's Kepler Center deputizing.

The subject matter includes the "non-thermal universe", the "dark universe" and "astroparticle theory". The Alliance follows in the footsteps of the successful networking concept of the Helmholtz Alliance "Physics on the Tera Scale" and bundles all significant astroparticle physics activities scattered across German universities. The reviewer panel unanimously agreed on funding the Alliance in the applied for form and to an amount of nearly €10m over a period of 5 years.

The University of Tübingen is home to the three working groups of Professor Dr. Josef Jochum (dark matter), Professor Dr. Andrea Santangelo (high energy neutrino astronomy) and Professor Dr. Tobias Lachenmaier (low energy neutrino astronomy).

Astroparticle Physics is a new, interdisciplinary field of research, overlapping Astrophysics, Particle Physics, Astronomy and Cosmology. It provides new information about the biggest and the smallest entities being investigated by physicists – from quarks to the cosmos.

"Astroparticle Physics" seeks to describe the distribution and measurement of cosmic particles – as the key to interpreting observation data and understanding the sources of cosmic radiation – cosmic accelerators have the highest energy levels in the universe – and the effects of dark matter.

The "non-thermal universe" focuses on the composition and interaction of cosmic radiation, with new detectors and future projects to the fore. The joint analysis of observation data on charged particles, gamma rays and neutrinos, gathered under the heading of "multi-messenger Astroparticle Physics".

The "dark universe" deals with the search for dark matter. "Dark matter is one of the greatest cosmic mysteries," says Professor Dr. Josef Jochum, deputy coordinator of the new alliance and researcher at the University of Tübingen. "Dark matter has far greater mass than all the stars

and galaxies together, yet we don’t know what it is.” The research alliance aims to develop more sensitive experiments in the future.

Some 100 scientists and 90 PhD students are now working together in the new Helmholtz Alliance, which will soon include a Graduate School – to train junior researchers in this complex interdisciplinary field of research.

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