DARWIN Observatory – Summary

- **DARWIN** will be the **ultimate dark matter detector**, probing a wide mass range and WIMP-nucleon cross sections down to the irreducible background of coherent neutrino-nucleus interactions
- **Dual-phase TPC** with **50 t xenon** (40 t active) deep underground with neutron veto, water Cherenkov muon veto and shield
- The large mass, low-energy threshold and ultra-low background will open **a large variety of accessible physics channels:** WIMPs, 0νββ, low-energy solar neutrinos, galactic supernova neutrinos, CEvNS, solar axions and galactic ALPs
- Competitive **0νββ** half life sensitivity and high-precision measurements of the **low-energy solar neutrino fluxes**
- DARWIN is growing, currently 33 institutions from 13 countries
- Future merger with **LUX-ZEPLIN collaboration**
- R&D: 2 full-scale demonstrators, photosensors, detector design, background mitigation -> supported by two **ERC Grants**: Xenoscope (Zurich CH), ULTIMATE (Freiburg GER)