EAS Tycho Brahe Medal - The Universe in 3D Motion - from SINFONI to GRAVITY and Towards the Future (No 2478)

02.07.2021 14:45 - 15:15 Prize winner
Friday Plenary & Closing ceremony

Frank Eisenhauer[1], SINFONI and GRAVITY Teams

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The last 25 years have seen wonderful times in high angular resolution, optical/infrared ground-based astronomy. Active optics has broken the barrier to enable ever larger telescopes. Adaptive optics systems now routinely remove the image blur from the turbulent earth atmosphere. Integral field spectroscopy adds the third, spectral dimension to imaging. Low-noise infrared detectors have allowed astronomers to take full advantage of these techniques. Near-infrared interferometry synthesizing telescopes with diameters of more than 100 meters now routinely provide exquisite spatial resolution for a wide-range of science questions. This presentation will describe the development and science exploration of the SINFONI and GRAVITY instruments on the ESO VLT. These two instruments have revolutionized the study of exoplanets, super-massive black holes, and star forming galaxies in the Early Universe. The development of both instruments was driven by ground-breaking science programs at the limit or beyond what was considered technically possible at the time, and with an ambitious science driven schedule to observe the peri-passage of the star S2 on its closest approach to the Galactic Center black hole in 2003 and 2018. The presentation will highlight some of the challenges and successes faced during the journey, emphasizing how the instrument, science, and observatory teams maneuvered the projects through rough waters towards new worlds never seen before in such detail.