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# The LIFE Mission - Characterizing other words and searching for life

In this talk, I will discuss the Large Interferometer For Exoplanets (LIFE), a space mission project rooted in Europe, which has been gaining significant international support and traction over the last few years. I will summarize the scientific vision for LIFE, provide an overview of ongoing technology development efforts, and give an outlook about the overall development process.

As a space-based nulling interferometer operating at mid-infrared wavelengths, LIFE will be able to directly detect hundreds of exoplanets - with an expected 30 to 50 of which of size and temperature similar to Earth - and measure their intrinsic thermal emission spectroscopically. The wavelength range and mission design of LIFE offers unique and distinct advantages compared to other future missions and projects. This allows LIFE to search for atmospheric biosignatures in Earth-twin exoplanets, but LIFE can also find atmospheric biosignatures from biospheres that differ significantly from that of Earth in their composition or stellar environment. Also, LIFE has the capabilities to search for imprints of technology in exoplanet atmospheres, so-called technosignatures. This versatility allows LIFE to become the world's leading mission in the search for life beyond the Solar System. With a target launch no later than 2040, LIFE's vision and ambition go beyond standard agency-led development processes, motivating us to explore new private-public partnerships.

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