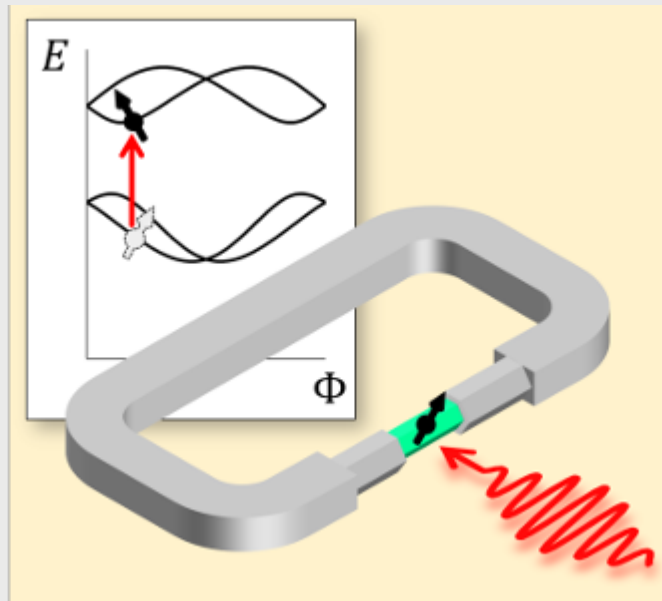


## Spin-Orbit Splitting of Andreev States Revealed by Microwave Spectroscopy



Article: published in [Physical Review X](#) by Sunghun Park, [Alfredo Levy Yeyati](#), IFIMAC researcher and member of the Department of Theoretical Condensed Matter Physics.

**W**e perform microwave spectroscopy of Andreev states in superconducting weak links tailored in an InAs-Al (core-full shell) epitaxially grown nanowire. The spectra present distinctive features with bundles of four lines crossing when the superconducting phase difference across the weak link is  $0$  or  $\pi$ . We interpret these features as arising from zero-field spin-split Andreev states. A simple analytical model, which takes into account the Rashba spin-orbit interaction in a nanowire containing several transverse subbands, explains these features and their evolution with magnetic field. Our results show that the spin degree of freedom is addressable in Josephson junctions and constitute a first step towards its manipulation. [[Full article](#)]

[Synopsis: Putting a Spin on the Josephson Effect](#)