Contribution submission to the conference Berlin 2024

Half-integer Shapiro steps in highly transmissive InSb nanoflag Josephson junctions — Andrea Iorio[1], Alessandro Crippa[1], Bianca Turini[1], Sedighe Salimian[1], Matteo Carrega[2], Luca Chirolli[1], Valentina Zannier[1], Lucia Sorba[1], Elia Strambini[1], Francesco Giazotto[1], and •Stefan Heun[1] — [1]NEST, Istituto Nanoscienze-CNR and Scuola Normale Superiore, Piazza San Silvestro 12, 56127 Pisa, Italy — [2]CNR-SPIN, Via Dodecaneso 33, 16146 Genoa, Italy

We investigate a ballistic InSb nanoflag-based Josephson junction with Nb superconducting contacts. The high transparency of the superconductor-semiconductor interfaces enables the exploration of quantum transport with parallel short and long conducting channels. Under microwave irradiation, we observe half-integer Shapiro steps that are robust to temperature, suggesting their possible nonequilibrium origin. Our results demonstrate the potential of ballistic InSb nanoflags Josephson junctions as a valuable platform for understanding the physics of hybrid devices and investigating their nonequilibrium dynamics. This research activity was partially supported by the FET-OPEN project AndQC (H2020 Grant No. 828948), PNRR MUR Project No. PE0000023-NQSTI, and PRIN MUR (Grant No. 2022PH852L).

Part:	**TT**
Type:	**Vortrag;Talk**
Topic:	**Superconductivity: Tunnelling and Josephson Junctions**
Keywords:	**Josephson junctions; Shapiro steps; InSb nanoflags**
Email:	**stefan.heun@nano.cnr.it**