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Fractional Flux Quantization in Loops of Unconventional Superconductors FLORIAN LODER, ARNO KAMPF, THILO KOPP, Center for Electronic Correlations and Magnetism, University of Augsburg, Germany — The magnetic flux threading a conventional superconducting ring is typically quantized in units of $\Phi_0 = hc/2e$. The factor 2 in the denominator of Φ_0 originates from the existence of two different types of pairing states with minima of the free energy at even and odd multiples of Φ_0. Here we show that spatially modulated pairing states exist with energy minima at fractional flux values, in particular at multiples of $\Phi_0/2$. In such states condensates with different center-of-mass momenta of the Cooper pairs coexist. The proposed mechanism for fractional flux quantization is discussed in the context of cuprate superconductors, where $hc/4e$ flux periodicities as well as uniaxially modulated superconducting states were observed.

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