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【615】 Fractional corner charges in spin-orbit coupled crystals

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We investigate two-dimensional spinful bulk insulating phases of matter that are protected by time-reversal and crystalline symmetries. In order to characterize these systems, we use the concept of corner charge fractionalization and show that charges are both quantized and remain stable as long as all symmetries are preserved. To define the topology, we employ symmetry indicators and Wilson loop invariants. We illustrate our results using the example of arsenic and antimony monolayers. Depending on the degree of structural buckling these materials can exhibit two distinct obstructed atomic limits. We present tight-binding and density functional theory calculations for open flakes to support our findings.

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