Pompeiu problem on the Heisenberg group and non-radial solids

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Work on the Pompeiu problem in the setting of the Heisenberg group has focused on the case of radial solids, such as the ball, or its boundary, the sphere. In these cases the Pompeiu property fails, and it is necessary to use two balls of appropriately chosen radii to recover the property.

For Euclidean space, the Pompeiu problem refers to an open conjecture which proposes that cases such as the ball are the only ones where the Pompeiu property does not hold. The idea is that no extra information is gained by the rotation. The Pompeiu property has been shown to hold for a wide class of sets, including sets whose boundary contains a "corner", as well as certain sets with real analytic boundaries, such as (non-circular) ellipses.

We will discuss how to approach the Pompeiu problem for non-radial solids in the setting of the Heisenberg group.