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Der-Chen E. Chang* (chang@georgetown.edu), Department of Mathematics, St.Mary's Hall,
Washington, DC 20057. *Variations on the Theorem of Pompeiu.*

Let X be a locally compact topological space and let G be a topological group acting on X . Assume that μ is a non-negative invariant Radon measure on X and $\{\gamma_j\}_{j=1}^N$ is a finite collection of compact subsets in X . Consider the Pompeiu transform

$$P : C(X) \rightarrow (C(G))^N$$

defined by

$$(P_j f)(g) := \int_{g\gamma_j} f d\mu,$$

where P_j is the j th component of the transform P and $g\gamma_j = \{g \circ x : x \in \gamma_j\}$. We say the family $\{\gamma_j\}_{j=1}^N$ has the Pompeiu property if P is injective. The Pompeiu problem is to decide as explicitly as possible whether the family has the Pompeiu property.

In this talk, we present some recent results in Heisenberg group for Pompeiu problem both for cases of a ball and for a bidisk. We also consider some aspects of the Morera side of the problem. (Received September 01, 2009)