

# TEMPLE UNIVERSITY

Department of Mathematics

## Analysis Seminar

Room 617 Wachman Hall

Monday, September 9 2019, 2:40 p.m.

*A local Tb Theorem for compact singular integral operators with non-homogeneous measures*

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**Abstract:** We introduce a new local  $Tb$  Theorem for Calderón-Zygmund operators

$$Tf(x) = \int f(t)K(t, x)d\mu(t)$$

that extend compactly on  $L^p(\mathbb{R}^n, \mu)$  for  $1 < p < \infty$  and  $\mu$  in a class of non-homogeneous measures. In the main result, compactness is deduced from the following two hypotheses:

- appropriate decay estimates satisfied by either the operator kernel or the operator measure, and
- the action of the operator over families of testing functions  $(b_Q)_{Q \in \mathcal{D}}$  supported on dyadic cubes, which in general may not be accretive.

As an application we describe the measures  $\mu$  such that the Cauchy integral defines a compact operator.