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**David F Walnut\*** ([dwalnut@gmu.edu](mailto:dwalnut@gmu.edu)), Department of Mathematical Sciences, George Mason University, Mail Stop 3F2, Fairfax, VA 22030. *Local reconstruction from averages.*

In this abstract, we consider the problem of reconstructing a function locally from its averages over translations of a finite collection of compact sets. Such problems are a subclass of the class of local Pompeiu problems. We show that this problem can be reduced to a problem of the completeness of collections of functions in  $L^2(E)$  where  $E$  is compact. Such collections are closely related to the sampling theory of functions bandlimited to  $E$ . This analysis shows in particular that the recovery of functions from their local averages is mildly ill-posed. (Received September 30, 2002)