

ABSTRACT. We show that in any invertible, ergodic, measure-preserving system, the two-sided square function obtained by comparing forward averages with their backwards counterparts, will diverge if the (time) length of the averages grows too slowly. This contrasts with the one-sided case. We also show that for any sequence of times, certain weighted sums of the forward averages diverge. This contrasts with what would happen if the times increased rapidly and two-sided differences were considered.