

Talk Title: Sharp smoothing estimates for averages over curves

Abstract: This talk concerns smoothing properties of the averaging operator defined by convolution with a measure on a smooth nondegenerate curve. Despite the simple geometric structure of such curves, the sharp smoothing estimates have remained largely unknown except for those in low dimensions. Devising a novel inductive strategy, we prove the optimal Sobolev regularity estimates in every dimension. Besides, we obtain the sharp local smoothing estimates, which consequently establish, for the first time, nontrivial L_p boundedness of the maximal averages over the nondegenerate curves in dimensions bigger than 3.