

I will give a brief overview of the theory of directional maximal and singular integrals and describe the connection to the Kakeya/Nikodym line of problems and to the Zygmund and Stein conjectures. For general ambient dimension n I will then discuss a sharp L^2 -bound for d -dimensional averages and general codimension $n-d$. Particular emphasis will be given to the case of codimension $n-d=1$ where the space L^2 is critical. I will present the corresponding optimal bounds for directional ---codimension 1 --- averages and singular integrals.