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Restriction estimates for some surfaces with vanishing curvatures

ABSTRACT:

Recent progress on Fourier restriction problem (notably to the cone and sphere) has been made by making use of bilinear estimates under suitable transversality conditions. However, such estimates were only known when the surfaces have no or one vanishing principal curvature and compared to linear restriction estimates the role of curvature does not seem to be clearly understood. We provide more clear picture on how the curvatures play roles in bilinear restriction setting and obtain a generalization of bilinear restriction estimates for surfaces with many vanishing curvatures. As application we also prove new linear restriction estimates for some class of conic surfaces.