Singular integrals and a problem on mixing flows

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Abstract. We prove a result related to Bressan’s mixing problem. We establish an inequality for the change of Bianchini semi-norms of characteristic functions under the flow generated by a divergence free time dependent vector field. The approach leads to a bilinear singular integral operator for which we prove bounds on Hardy spaces. We include additional observations about the approach and a discrete toy version of Bressan’s problem.