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Analytical approach to the energy transfer around elliptic Burgers vortices[1] HIROMICHI KOBAYASHI, Keio Univ — The energy transfer from large-scale to small-scale around elliptical Burgers vortices is analytically examined. The elliptical Burgers vortex is constructed by the background straining flow to the Burgers vortex, so that the Burgers vortex becomes non-axisymmetric. By taking a filter to the elliptical Burgers vortices, we obtain the filtered velocity field. In large eddy simulation (LES), understanding the energy transfer from resolved-scale to subgrid-scale (SGS), the so-called forward scatter, around the eddy is important. The SGS stress tensor is decomposed to Leonard, cross and Reynolds terms. Those contribution to the energy transfer is discussed. The forward scatter region of the Leonard term appears along the major axis of the elliptic Burgers vortex. For cross and Reynolds terms, the forward scatter regions emerge along the minor axis. The Reynolds term has much smaller intensity than the cross term.

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