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Eigenframe alignment dominates scale-to-scale energy fluxes in turbulence JOSEPH BALLOUZ, student, NICHOLAS OUELLETTE, Professor — In large-eddy simulation, the cascade is cut off at a certain scale and the transfer term to smaller scales is modeled. This transfer term depends on the eigenvalues of the turbulent stress and resolved strain-rate tensors and the Euler angles between their eigenframes. In a typical Smagorinsky closure, two assumptions are made: these angles are set to zero and the stress eigenvalues are modeled as scaled version of the stress. We show that it is the Euler angles that have a much larger effect on the transfer in terms of the directionality of the cascade and its efficiency.

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