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Tampering with the turbulent energy cascade with polymer additives[1] PEDRO VALENTE, CARLOS DA SILVA, IST - U. Lisbon, FERNANDO PINHO, FEUP - U. Porto — We show that the strong depletion of the viscous dissipation in homogeneous viscoelastic turbulence reported by previous authors does not necessarily imply a depletion of the turbulent energy cascade. However, for large polymer relaxation times there is an onset of a polymer-induced kinetic energy cascade which competes with the non-linear energy cascade leading to its depletion. Remarkably, the total energy cascade flux from both cascade mechanisms remains approximately the same fraction of the kinetic energy over the turnover time as the non-linear energy cascade flux in Newtonian turbulence.

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