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**Is the growth rate of a turbulent mixing layer universal ?**[1] SAIKISHAN SURYANARAYANAN, RODDAM NARASIMHA, JNCASR, Bangalore — The controversy on the universality of asymptotic spreading rates in turbulent shear flows remains unresolved even in the context of the widely studied mixing layer. This fundamental issue has deep implications on modeling. A strong case for the existence of a regime of universal spreading rate for a 2D temporal mixing layer simulated by a repeated array of point-vortices is presented. In the most extensive set of point-vortex simulations, involving up to 10000 vortices, ensemble averages over up to 108 realizations, it is established that the growth rate of momentum thickness varies by less than 1% from a universal value of 0.0167 times the velocity differential in the linear overlap between the initial condition influenced 'inner' region and the domain-size limited 'outer' region for uniform random, Gaussian, bimodal and periodic initial conditions, with amplitudes spanning 8 orders. The conclusion remains unaffected on addition of diffusion through random walk or on desingularization of the point-vortices. A quantitative reproduction of experimental observations on forced mixing layers is presented. The possible reasons for observations of apparently non-universal spreading rates in experiments and simulations are discussed.

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