Mixing and Moffatt Eddies in the Rectangular Channel MIRON KAUFMAN, PETRU S. FODOR, Cleveland State University — A detailed analysis of the fluid flow in the infinitely long rectangular channel is performed by combining numerical and analytical methods. While finite element analysis numerical models are used to extract the transversal velocity field, an analytical model in the limit of zero Reynolds numbers is used to determine the longitudinal component of the fluid velocities. Using this high resolution 3D model developed for the fluid flow in channels with aspect ratios ranging from 1 to 10, we identify the position and extent of Moffatt eddies, which impede mixing. We study the fluid mixing by using entropic measures. This model is relevant to polymer processing extruders used as mixers.

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