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**Merging of drops to form bamboo waves.** (English) Zbl 1137.76725

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Summary: Topological transitions in core-annular flow of oil and water are described. Drops of one liquid are suspended in the second liquid and transported through a pipeline under a pressure gradient. We examine the merging of an array of drops in this two-fluid flow. Larger drops are found to merge and the flow undergoes a topological transition to core-annular flow. In core-annular flow of two liquids, one liquid lies at the core and the other surrounds it. For the case of large oil bubbles in water, a steady core-annular flow with bamboo waves on the interface is achieved. For the case of large water bubbles in oil, the ensuing core-annular flow has continually breaking waves at the interface.

**MSC:**

**76Txx** Multiphase and multicomponent flows

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core-annular flow; bamboo waves; direct numerical simulation; volume-of-fluid scheme

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