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Meandering instability of a rivulet on a partially wetting incline ADRIAN DAERR, NOLWENN LE GRAND-PITEIRA, LAURENT LIMAT, PMMH/ESPCI & MSC/Univ Paris 7 — A rivulet will not generally follow a straight path when flowing down an inclined plane. Depending on the control parameters (flowrate and inclination angle), as well as the liquid and substrate type, the straight path is unstable and after some transient dynamics the rivulet settles on a stationary sinuous path. Although this path is not perfectly reproduced in successive runs, the amplitude, wavelength and the curvature of the bends have characteristic mean values. It appears that the stationary pattern results from an equilibrium between inertial forces and hysteretic wetting effects (pinning of the contact line on the substrate). As opposed to that, we find that the instability of the straight path results from a competition between inertial forces and surface tension. We will present our experimental result and simple models for the dependencies of amplitude, wavelength and curvature on the control parameters.

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