

**Waleffe, Fabian**

**Hydrodynamic stability and turbulence: Beyond transients to a self-sustaining process.**  
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A self-sustaining mechanism believed central to the instability of shear flows is described. It consists of three elements: formation of streaks by downstream rolls, breakdown of the streaks, and regeneration of the rolls from the streak breakdown. Each of the three elements is described and supported by numerical results. A simple model is suggested to describe the mechanism and to show that it coexists with the laminar state.

Reviewer: [Y.Kivshar \(Canberra\)](#)

**MSC:**

[76E05](#) Parallel shear flows in hydrodynamic stability  
[76F10](#) Shear flows and turbulence

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**Keywords:**

[regeneration of rolls](#); [formation of streaks](#); [streak breakdown](#)

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