

Temam, Roger**Variété inertielle approximative pour les équations de Navier- Stokes bidimensionnelles. (Approximate inertial manifolds for the two dimensional Navier-Stokes equations).** (French.English summary) [Zbl 0638.76035](#)

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Summary: We introduce the principle of the induced trajectory which allows us to associate to a given orbit numerous orbits which approximate the initial one for large time at increasing levels of accuracy. Using the induced orbits, we construct analytical manifolds of finite dimension, whose equation is explicitly given and fairly simple. Any solution of the bidimensional Navier-Stokes equations converges exponentially as $t \rightarrow \infty$ to a small neighborhood of one of these manifolds. Those manifolds appearing as approximate inertial manifolds for the Navier- Stokes equations, provide an approximate description of permanent turbulent flows observed in fluid mechanics.

MSC:[76D05](#) Navier-Stokes equations for incompressible viscous fluids[76F99](#) TurbulenceCited in **16** Documents**Keywords:**[principle of the induced trajectory](#); [induced orbits](#); [analytical manifolds of finite dimension](#); [bidimensional Navier-Stokes equations](#); [approximate description of permanent turbulent flows](#)