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Patent Search

Invention Title	Computational Analysis of the Consistency for the Navier-Stokes Equation and the Formation of a Uniform Velocity Pr
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Abstract:

Abstract The boundary solution of a partial differential equation is said to be periodic if it is spatially smooth, satisfies the continuity equation, and th incompressible flow. The initial velocity field in the Navier-Stokes equation must be convergent. Although it is commonly believed that if an initial cor condition, then the two conditions are congruent, this is not the case. The Navier-Stokes equation's entire compatibility requirement may not be met The solution is irregular at the outset if the requirement has not been met. Although fluid dynamics research as a whole is aware of the problem, it h widespread attention. In this research, we provide a workable computation method for determining if the two systems are compatible. In addition, a also described that fails the seamless initial condition with no spatially smooth approach at the onset of the stream. The analysis and computations framework. In the absolute lack of wall-normal velocity, the findings for just a channel configuration demonstrate that the constraint is always satisfi periodic solution. The condition is often not achieved if the wall-normal acceleration of an object is non-zero, although counter-examples could be cc techniques. To ensure proper beginning conditions for delicate time-dependent numerical simulations, the technique of generating such a field is he may help you figure out if the selected starting conditions apply or not.

<u>**Complete Specification**</u>

Description:Computational Analysis of the Consistency for the Navier-Stokes Equation and the Formation of a Uniform Velocity Profile in a Channel

Field and Background of the Invention
During the previous century, some quantitative proofs were constructed demonstrating the possibility of a smooth Navier-Stokes solution. Ladyzhe concise summary of the earliest theorems. A mathematical theorem exists in two dimensions for the Navier-Stokes partial differential equation up However, this has not yet been proven in different dimensions. However, it is acknowledged that perhaps the exceptional solution would occur for intervallic domains. The continuity equation, however, can indeed be completely arbitrary if there is a wall present and the domain is confined in sc noted briefly in the aforementioned work, and it was subsequently researched extensively. It was shown that if the starting condition satisfies the c then the solution is periodic in 3D space at time t = 0. Following these mathematical findings, he provided a physical justification for them. The calc leads to an arbitrary reference problem whether the velocity profile is dictated next to the boundary (Dirichlet boundary constraint). Typically, a Ne pressure is obtained by solving the wall-normal numerical solution. Although, in some cases, the computed pressure can conflict with the tangentia distribution. If the incompatibility condition is not met, obtaining a boundary condition by employing the tangential element of the velocity profile different pressure field. That would be the case even if the condition were satisfied. The issue was also seen in CFD, as addressed by "How should t condition be handled?" was the key question posed by the writers. Both the Dirichlet as well as the Neumann boundary conditions lead to distinct s is not satisfied. It is suggested that the Neumann equation be used at the start. Furthermore, they provide a variety of solutions to the issues that a

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TITLE OF INVENTION	Computational Analysis of the Consistency for the Navier-Stokes Equation and the Formation of a Uniform Velocity Profile in a Channel
FIELD OF INVENTION	COMPUTER SCIENCE
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REQUEST FOR EXAMINATION DATE	--
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Application Status	
APPLICATION STATUS	**Awaiting Request for Examination**

			View Documents

➡ Filed ➡ Published ➡ RQ Filed ➡ Under Examination ➡ Disposed

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