5007-35-147 **Débora Francisco Albanez*** (deboraalba@gmail.com), Campinas, SP , Brazil. *An approach for The Fourier projections as determining modes for Navier-stokes-α equations.*

In this work we consider the Navier-Stokes-α equations, subject to periodic boundary condition.

The aim of this work is to consider the Fourier Projections P_N as observational measurements, obtained continuously in time, introduce them in the Navier-Stokes-α Equations in a particular way, and then to prove that the solution of this new equation converges to the solution of Navier-Stokes-α Equations, independently of the inicial data, as $t \to \infty$. The theorem is:

Let $f \in H$ and $u \in C([t_0, \infty); V) \cap L^2([t_0, \infty); D(A))$ be a solution to the Navier-Stokes-α, and $v := u + \alpha^2 Au$. Suppose $w \in L^2([t_0, \infty); D(A)) \cap L^\infty([t_0, \infty); V)$ satisfies the equation

$$\frac{d}{dt}(w + \alpha^2 Aw) + \nu A(w + \alpha^2 Aw) + \widetilde{B}(w, w + \alpha^2 Aw) = f - \mu P_N(z - v) \tag{1}$$

for $t > t_0, w(t_0) \in H$ and $z := w + \alpha^2 Aw$ where $\mu > 0$ is a sufficient large parameter and $N \in \mathbb{N}$ must be determined. Then $w(t) - u(t) \to 0$, when $t \to \infty$, in L^2 and H^1-norms. (Received May 03, 2013)