POSTER

A Comparison with the Fractal Method and the Wavelet Transform in Time Series Analysis

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Time series of geophysical quantities such as river discharge, wind velocity, air temperature, etc. can be seen as fractals, because of their often self-similar structure. Therefore, a fractal dimension can be defined for time series, which accounts for a more predictable (low fractal dimension) or less predictable (high fractal dimension) behavior. In this paper, time series of temperature, sea level pressure and precipitation at a station in the south region of Brazil are analyzed and their fractal dimensions are computed based in the Box-counting method. In order to verify the regimes transitions in the time series there are also executed a spectral analysis by mean the wavelet transformed. Inferences on the predictability of the distinct time series evolution are made and discussed.
Key words: Fractal, time series.

On The Burnside Problem In Symp (M)

Ana Lucia Da Silva And Julio Cesar Rebelo

In this paper we obtain some non-linear analogues of Schur's theorem asserting that a finitely generated subgroup of a linear group all of whose elements have finite order is, in fact, finite. The main result concerns groups of symplectomorphisms of certain manifolds of dimension 4 including the torus T4.
Theorem A: Let M be a compact 4-dimensional symplectic manifold and denote by Symp (M) the group of symplectomorphisms of M (say of class C2). Suppose that the fundamental class in H4(M,) is a product of classes in H1(M,). Then any finitely generated subgroup G _ Symp (M) having only elements of finite order is, in fact, finite.

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Rotation Number with respect to external referential: de¯nition and properties

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In this work we will show a new concept of rotation number for ¯elds on manifolds. That number will measure how the ¯elds rotate with respect to an external referential and introduce the concept of ¯elds rotation with respect to curves.
The number is related with geometric concepts such as geodesic curva- ture and it presents a kind of stability property. This is a joint work with P. R. C. Ru±no, whose lecture at the event is on the same topic, and P. J. Catuogno.

Rotation number for random dieomorphisms on the circle (conditions for random conjugacy)

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Consider a cocycle of random orientation preserving di®eomorphisms on the circle *f*(*!*) : *S*1 *!* *S*1, based on a probability space (-*;F; P*), with an ergodic shift *μ* : - *!* -. We present an ergodic theorem for the rotation number *R*(*f;μ*) of the composition of the random sequence (*f*(*μn!*))*n*¸0, Cf. [1]. If *R*(*f;μ*) is irrational, we look for conditions on the existence of a random (measurable) homeomorphism *h*(*!*) which provides the cocycle conjugacy with rotation:
f(*!*) = *h*¡1(*μ!*) ± *R*(*f*(*!*)) ± *h*(*!*)*:* Yet, we investigate the existence of this cocycle conjugacy for a stochastic flow (non structurally stable) in *S*1.