

Texas Tech University. Applied Mathematics Seminar.

## **An explicit Poincaré–Dulac normal form for Navier–Stokes equations**

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Room: MATH 016. Time: 4:00pm.

ABSTRACT. We study the incompressible Navier–Stokes equations with potential body forces on the three-dimensional torus. We show that the normalization introduced in the paper *Ann. Inst. H. Poincaré Anal. Non Linéaire*, 4(1):1–47, 1987, produces a Poincaré–Dulac normal form which is obtained by an explicit change of variable. This change is the formal power series expansion of the inverse of the normalization map. Each homogeneous term of a finite degree in the series is proved to be well-defined in appropriate Sobolev spaces and is estimated recursively by using a family of homogeneous gauges which is suitable for estimating homogeneous polynomials in infinite dimensional spaces.

This is joint work with Ciprian Foias and Jean-Claude Saut.