

## FOURIER STABILITY ANALYSIS APPLIED TO NAVIER-STOKES SEGREGATED ALGORITHMS

César Venier<sup>a,b,d</sup>, César Pairetti<sup>b,e</sup>, Santiago Márquez Damián<sup>a,c</sup> and Norberto Nigro<sup>a,d</sup>

<sup>a</sup>*Research Center for Computational Methods, CONICET, Santa Fe, Argentina,  
cesar.venier@cimec.santafe-conicet.gov.ar, <http://www.cimec.org.ar>*

<sup>b</sup>*Facultad de Ciencias Exactas, Ingeniería y Agrimensura, Universidad Nacional de Rosario, Rosario,  
Argentina, [pairetti@fceia.unr.edu.ar](mailto:pairetti@fceia.unr.edu.ar), <http://web.fceia.unr.edu.ar>*

<sup>c</sup>*Facultad Regional Santa Fe, Universidad Tecnológica Nacional, Santa Fe, Argentina*

<sup>d</sup>*Facultad de Ingeniería y Ciencias Hidricas, Universidad Nacional del Litoral, Santa Fe, Argentina*

<sup>e</sup>*Centro Científico y Tecnológico Rosario, CONICET, Rosario, Argentina*

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**Abstract.** The present work aims to determine stability ranges of segregated algorithms (i.e. SIMPLE, PISO) for the solution of the Navier-Stokes equations. The linearization procedure for these algorithms allows the use of the Fourier series decomposition as a tool at determining the amplification of the error on the computed solution of the solution. Several characteristic parameters (such as the Courant number, Reynolds number, number of PISO correctors and relaxation factors) are studied in order to understand their sensitivity in the general stability behaviour. Finally, due to the typical limitations of the Fourier approach, some comments are presented regarding the extension to real problems, accounting for issues such as non-cyclic boundary conditions, source terms and non-linear behaviour.