Analysis and development of finite volume methods for the new generation of cubed sphere dynamical cores for the atmosphere

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Education is what remains after one has forgotten everything he learned in school.
— Albert Einstein

Acknowledgements

TBW

Resumo

Luan da Fonseca Santos. **Análise e desenvolvimento de métodos de volumes finitos para modelos da nova geração da dinâmica atmosférica baseados na esfera cubada**. Tese (Doutorado). Instituto de Matemática e Estatística, Universidade de São Paulo, São Paulo, 2023.

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Palavras-chave: Núcleo dinâmico da atmosfera, esfera cubada, volumes finitos, dimension splitting, ponto de partida, corretor de massa.

Abstract

Luan da Fonseca Santos. **Analysis and development of finite volume methods for the new generation of cubed sphere dynamical cores for the atmosphere**. Thesis (Doctorate). Institute of Mathematics and Statistics, University of São Paulo, São Paulo, 2023.

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Keywords: Dynamical core, cubed-sphere, finite-volume, dimension splitting, departure point, mass fixer.

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Numerical Analysis

A.1 Finite-difference estimates

This Section aims to prove all finite-difference error estimations used throughout this appendix. All the proves are very simple and consist of applying Taylor's expansions, as it is usual when computing the accuracy order of many numerical schemes.

Appendix B

Code avaibility