

Residual Minimization Methods for Flow Modelling and Simulation

23rd IACM Computational Fluids Conference (CFC 2025)

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Organisers: Victor Calo (Curtin U) and Santiago Badia (Monash U)

The **23rd IACM Computational Fluids Conference (CFC 2025)** is an excellent opportunity to bring together leading researchers and professionals in residual minimisation methods and their application to computational fluid dynamics (CFD) and industrial applications. This workshop will focus on **Residual Minimization Methods**, including the **Discontinuous Petrov-Galerkin (DPG) method** and **Least-Squares Finite Elements**, and their growing use in solving complex systems. It will also cover **deep learning-based discretisations of PDEs** using residual minimisation loss functions to improve accuracy and make training more robust. The minisymposium will explore how these advanced mathematical techniques contribute to more accurate and stable numerical solutions. Residual minimisation techniques, such as the Discontinuous Petrov-Galerkin (DPG) and Least-Squares Finite Element methods, improve CFD simulations' stability, accuracy, and convergence. We expect a thorough discussion of their benefits in addressing common numerical challenges, such as ill-conditioning, boundary and internal layer resolution, and solution stabilisation. These sessions will discuss applications in fluid dynamics, heat transfer, multi-phase flows, turbulence modelling, and industrial process optimisation.