

Accepted Manuscript

A pressure-corrected Immersed Boundary Method for the numerical simulation of compressible flows

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PII: S0021-9991(18)30494-7
DOI: <https://doi.org/10.1016/j.jcp.2018.07.033>
Reference: YJCPH 8158

To appear in: *Journal of Computational Physics*

Received date: 14 February 2018
Revised date: 18 June 2018
Accepted date: 16 July 2018

Please cite this article in press as: H. Riahi et al., A pressure-corrected Immersed Boundary Method for the numerical simulation of compressible flows, *J. Comput. Phys.* (2018), <https://doi.org/10.1016/j.jcp.2018.07.033>

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Highlights

- The integration of a pressure-based correction of the IBM forcing which is analytically derived from the dynamic set of equations. This feature dramatically improves the robustness for the calculation of the pressure field in the near wall region, which governs the emergence and evolution of different dynamic regimes.
- The IBM exhibited a high level of algorithmic flexibility. It performed remarkably well when implemented in two completely different flow solvers. This aspect indicates that an efficient performance should be granted even with implementation to other codes available for CFD investigation.
- The present IBM formulation is efficient with respect to the computational costs demanded, providing a computational advancement with respect to early development of similar IBM strategies.

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