

# Closure to “Discussion: ‘A Novel Explicit Equation for Friction Factor in Smooth and Rough Pipes’ ” (2011, ASME J. Fluids Eng., 133, p. 015501)

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The discussion made by Tajadura and Gonzales [1] necessitates the clarification of the comments about our paper [2]. The same notation and comment numbers are used here, to respond to the following comments.

(a) It should be expected that the three equations, which

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were proposed for the calculation of friction factor, should give almost the same results. Otherwise, we should be in doubt about the correctness of a formula that gives different results.

- (b) The new equation presented in Ref. [2] can be used for turbulent flows and there is no limitation comparing to other classical equations.
- (c) The study given by Avci and Karagoz [2] presents a new approach to obtain the friction factor explicitly, depending on surface roughness and Reynolds number. It gives an alternative way for friction factor calculation. It is not a pure empirical equation and the derivation of this formula was also given in this paper.
- (d) Actually, a new formula must be compared with experimental data rather than other empirical formulas. Therefore, in our paper, the proposed formula is compared with experimental data taken from literature. Detailed information on the experiments and experimental results including “Princeton superpipe” can be found in related literature and is not given here.

## References

- [1] Tajadura, R. B., and Gonzales, J., 2011, “Novel Friction Factor Calculations. Comments on Recently Published Approaches,” ASME J. Fluids Eng., **133**, p. 015501.
- [2] Avci, A., and Karagoz, I., 2009, “A Novel Explicit Equation for Friction Factor in Smooth and Rough Pipes,” ASME J. Fluids Eng., **131**, p. 061203.