

Correction

Correction: Brkić, D., and Praks, P. Accurate and Efficient Explicit Approximations of the Colebrook Flow Friction Equation Based on the Wright ω -Function. *Mathematics* 2019, 7, 34

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Having in mind that in the title of the article contains term “Wright ω -function” and not its cognate “Lambert W-function”, the authors would like to change Equation (2) of [1] in order to contain both expressions, as follows:

$$\left. \begin{aligned} \frac{1}{\sqrt{f}} &= \frac{2}{\ln(10)} \cdot \left(\ln\left(\frac{R}{2.51} \cdot \frac{\ln(10)}{2}\right) + W(e^x) - x \right) \\ x &= \ln\left(\frac{R}{2.51} \cdot \frac{\ln(10)}{2}\right) + \frac{R \cdot \varepsilon^*}{2.51 \cdot 3.71} \cdot \frac{\ln(10)}{2} \end{aligned} \right\} \rightarrow \left. \begin{aligned} \frac{1}{\sqrt{f}} &= \frac{2}{\ln(10)} \cdot \left(\ln\left(\frac{R}{2.51} \cdot \frac{\ln(10)}{2}\right) + \omega(x) - x \right) \\ x &= \ln\left(\frac{R}{2.51} \cdot \frac{\ln(10)}{2}\right) + \frac{R \cdot \varepsilon^*}{2.51 \cdot 3.71} \cdot \frac{\ln(10)}{2} \end{aligned} \right\}$$

The authors also want to change Equation (11) as follows:

$$B \approx s \cdot (0.0001086 \cdot s^6 + 0.9824) - \frac{0.006206}{r} - r \cdot (0.000007237 \cdot r - 0.006656) + 11.881,$$

The last sentence in Section 2.3 should be added as follows:

“Numerical experiments show that for the here mentioned approximation $\ln\left(\frac{2 \cdot 2.51}{\ln(10)}\right) \sim 0.7794$ is enough. For this reason we use this value in the Matlab codes shown in Section 3.”

In order to facilitate the use of the methods presented in [1], the authors want to add a new Section “3. Software Description” with the following text:

The presented approximations are thoroughly tested and registered at VŠB–Technical University of Ostrava, Czech Republic. The codes are given in Matlab, but they can be easily transposed in any programming language. The symbol I.R denotes the vector of the Reynolds number R , whereas I.K denotes the vector of the relative roughness of the inner pipe surface ε^* . The final result of the codes is the vector of the Darcy friction factor f .

The Matlab code for Equation (2), which presents the exact solution of the Colebrook equation using the Wrightomega function $y = \text{wrightOmega}(x) - x$ is:

```
c.C = 2 * 2.51/log(10); c.logC = log(c.C); c.C371 = c.C * 3.71; c.Cd251 = c.C/2.51;
B = log(I.R) - c.logC;
A = I.R.* I.K./c.C371;
x = A + B;
y = wrightOmega(x) - x;
f = 1./(c.Cd251. * (B + y)).^2
```

If needed, $\text{wrightOmega}(x)$ can be replaced by: $\text{lambertw}(\exp(x))$.

The Matlab code for Equation (3), which presents the approximation of the Colebrook equation using $y = \ln x./x - \ln x$, where the symbol $\ln x$ denotes the natural logarithm is:

```
c.Cd251 = 0.8686; c.logC = 0.7794; c.C371 = 8.0878;
B = log(I.R) - c.logC;
A = I.R. * I.K./c.C371;
x = A + B;
lnx = log(x);
y = (lnx./x - lnx);
f = 1./(c.Cd251. * (B + y)).^2;
```

The Matlab code for Equation (5), which presents the approximation of the Colebrook equation using $y = (1.038 * \ln x)/(x + 0.332) - \ln x$ is the same like approximation using $y = \ln x./x - \ln x$, but the line $y = (\ln x./x - \ln x)$ is replaced by: $y = (1.038 * \ln x)/(x + 0.332) - \ln x$

Matlab code for Equation (6) which presents the approximation of the Colebrook equation using $y = (1.0119 * \ln x)/x - \ln x + (\ln x - 2.3849)/x.^2$ is the same like approximation using $y = \ln x./x - \ln x$, but the line $y = (\ln x./x - \ln x)$ is replaced by: $y = (1.0119 * \ln x)/x - \ln x + (\ln x - 2.3849)/x.^2$

Subsequently, Section "3. Conclusion" will be "4. Conclusion".

The changes do not affect the scientific results. The manuscript will be updated, and the original will remain online on the article webpage, with reference to this Correction.

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Conflicts of Interest: The authors declare no conflict of interest.

References

1. Brkić, D.; Praks, P. Accurate and efficient explicit approximations of the Colebrook flow friction equation based on the Wright ω -function. *Mathematics* **2019**, *7*, 34. [[CrossRef](#)]



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