For evaluating y_{*R2} and y_{*R1} initial guesses $0.9\sqrt{2}$ (90% of asymptote value) and $0.1\sqrt{2}$ might be used respectively.

For a triangular cross section Eq. (10) takes the form

$$f_{ET}(y_*) = 1 - \frac{y_{*T}^3}{3} - \frac{Q_{*R}}{y_{*T}^2} = 0 \tag{16}$$

where $y_{*T}=y(Z/F)^{1/3}$ and $Q_{*T}=Q^2/[g(ZF^5)^{1/3}]$.

For this cross section appropriate arrangements of $h_{2T}(y_{*T})$ and $h_{1T}(y_{*T})$ for y_{*T2} and y_{*T1} calculation are given by Eqs. (17) and (18), respectively

$$y_{*T} = h_{2T}(y_{*T}) = \sqrt[3]{3\left(1 - \frac{Q_{*T}}{y_{*T}^2}\right)} \tag{17}$$

$$y_{*T} = h_{1T}(y_{*T}) = \sqrt{\frac{Q_{*T}}{1 - y_{*T}^3/3}} \tag{18}$$

Values $0.9(3)^{1/3}$ and $0.1(3)^{1/3}$ could be used as initial guesses for computing y_{*T2} and y_{*T1}, respectively.

Table 1 presents the convergence details of the proposed equations.

Closure to "Solution of Specific Energy and Specific Force Equations" by Amlan Das

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The discussers deserve an acknowledgment for taking interest in the writer's work. The subject matter in the discussion can be put on record as another application of the fixed-point iterative technique for solving the polynomial equations. The faster or slower rate of convergence was never an issue in the writer's work. The main strength of the writer's work is its capacity of identifying the data inconsistency in a conclusive manner. The second example of the writer's work shows the solution results suffice to conclude about the data inconsistency, which no other method can yield. Another advantage of the methodology is that all five roots become available simultaneously, making the methodology applicable in other areas of science and engineering.

Discussion of "Minimum Specific Energy and Critical Flow Conditions in Open Channels" by H. Chanson

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The discussers would like to thank the author for presenting nondimensional solutions for the critical flow conditions in open channels.

Regarding the S1 solution the author confirmed that the solution does not concur with the experimental data and attributed the discrepancy to the solution instability. It could readily be shown that S1 solution is highly sensitive. Therefore, it might provide nonrealistic answers for some circumstances.

Solving Eq. (8) for C_D yields

$$C_D = \frac{1.5\sqrt{3}}{\sqrt{\beta}\Lambda}\sqrt{\left(\frac{d_c}{E_{\min}}\Lambda\right)^2 - \left(\frac{d_c}{E_{\min}}\Lambda\right)^3}$$

A relative sensitivity index, S, for the dimensionless discharge coefficient,C_D, could be defined as follows:

$$S = \frac{\partial C_D}{C_D}\Bigg/\frac{\partial\Lambda}{\Lambda} = \frac{\Lambda}{C_D}\frac{\partial C_D}{\partial\Lambda}$$

Differentiating C_D with respect to Λ yields

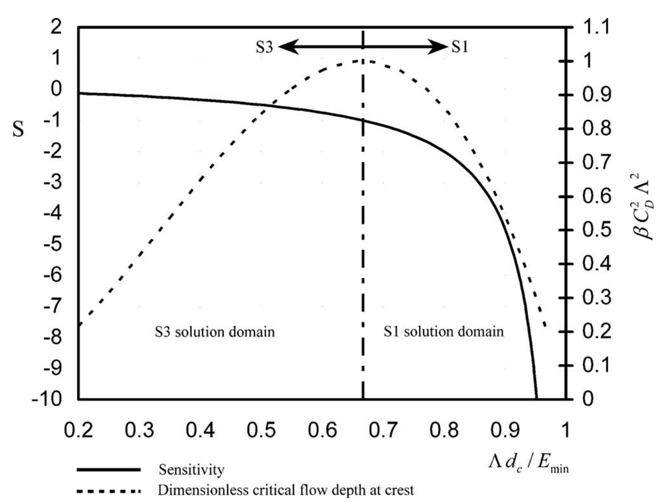

Fig. 1. Variation of relative sensitivity and dimensionless critical flow depth at crest for S1 and S3 solutions