1. Initialize hydraulic parameters as $(\mathbf{s_0})$ and structural parameters $(\theta_\mathbf{0})$.
2. Solve for a new estimate of hydraulic parameters $(\hat{\mathbf{s}})$ holding θ constant.
3. Solve for a new estimate of structural parameters $\left(\hat{\theta}\right)$ holding $\mathbf{s}$ constant.
4. Repeat steps 2 and 3 until the change in θ in two consecutive outer iterations of steps 2 and 3 decreases below a specified tolerance.

Posterior Covariance

The posterior covariance can be calculated based on the inverse of the Hessian of the objective function (for example, Nowak and Cirpka, 2004). In closed form, the equation for the full posterior covariance matrix is:

$$\mathbf{V} = \mathbf{G_{ss}} - \mathbf{G_{sy}}\mathbf{G_{yy}^{-1}}\mathbf{G_{sy}^{\mathit{T}}}$$

where $\mathbf{G_{sy}} = \mathbf{G_{ss}}\mathbf{H}^T$ and $\mathbf{G_{yy}} = \mathbf{H}\mathbf{G_{ss}}\mathbf{H}^T + \mathbf{R}$. In the case where compression of $\mathbf{Q}$ is not used, the full matrix $\mathbf{V}$ is calculated and reported. Where compression of $\mathbf{Q}$ is used, however, the diagonal of $\mathbf{V}$ is returned as a vector of variances on parameters. This information is reported in a separate file, but also used to calculated posterior 95% confidence intervals. The full matrix, when reported, can be used to calculate conditional realizations (Kitanidis, 1995, 1996).

The D should be lowercase.

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