**Electronic Supplement to**

# Damping-dependent correlations between response spectral ordinates


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This electronic supplement includes the following CSV files with the coefficients of the fitted nonlinear regression model:

- rho5.csv: table containing $\rho_{5\%}(T_1, T_2)$
- A.csv: table containing $A(T_1, T_2)$
- B.csv: table containing $B(T_1, T_2)$
- C.csv: table containing $C(T_1, T_2)$

With these files, the correlation between total residuals of spectral accelerations with different periods and different damping ratios, $\rho(T_1, \xi_1, T_2, \xi_2)$, can be computed using the following equations:

$$\rho(T_1, \xi_1, T_2, \xi_2) = \rho_{5\%}(T_1, T_2) + \Delta(T_1, \xi_1, T_2, \xi_2) \tag{1}$$

$$\Delta(T_1, \xi_1, T_2, \xi_2) = A(T_1, T_2)\, x_1^2 + A(T_2, T_1)\, x_2^2 + B(T_1, T_2)\, x_1 + B(T_2, T_1)\, x_2 + C(T_1, T_2)\, x_1 x_2 \tag{2}$$

$$x_1 = \ln(\xi_1/0.05) \qquad\qquad x_2 = \ln(\xi_2/0.05) \tag{3}$$

where $T_1$ and $T_2$ are the periods; and $\xi_1$ and $\xi_2$ are the damping ratios. Please note that since the coefficient matrices $A$ and $B$ are non-symmetric, the order in which the periods are used is important. To use the model correctly, the first argument must be used to define the correct column in the associated table and the second argument must be used to define the row. For example, to compute $A(T_1, T_2)$, period $T_1$ is used for the column and period $T_2$ is used for the row of matrix $A$.