What this code is about

The C++ code function.cpp computes the third term in the right-hand side of equation (3.50)

$$E^{(3)}(\beta) = 1 + \sum_{k=0}^{\infty} \frac{(-1)^k}{\beta^k} \mu_{-(2k+2)} + \Delta(\beta) \tag{1}$$

where the $\Delta(\beta)$ term is given by,

$$\Delta(\beta) = \frac{\pi\, \beta^{(1+\nu)/2}}{\sin(\pi\nu)} \left(\cos\left(\frac{\pi\nu}{2}\right) \mathrm{Im}\, g\left(i/\sqrt{\beta}\right) + \sin\left(\frac{\pi\nu}{2}\right) \mathrm{Re}\, g\left(i/\sqrt{\beta}\right) \right), \tag{2}$$

with $\nu = -1/2$ and

$$g(x) = e^{-x/2} \sum_{m=0}^{d} c_m m! \sum_{k=0}^{m} \frac{(-x)^k}{(k!)^2 (m-k)!}. \tag{3}$$

The code requires the $d+1$ numbers c_m's as inputs. These are read-in from the file Constant.txt. The code outputs values for for $\beta = 10^{-2} - 10^{25}, 0.2$ and $\beta = 4$ and writes to the file FIFTH.txt.

The file compile.job is a SLURM script to compile the code in an HPC and generate an executable.

The file together.job is a SLURM script to run the executable in an HPC.