Poisson's Equation 3D

Poisson's equation is solved three dimensionally in cuboid shape structure Ω using finite element method. Variable is u and S is side surfaces of Ω.

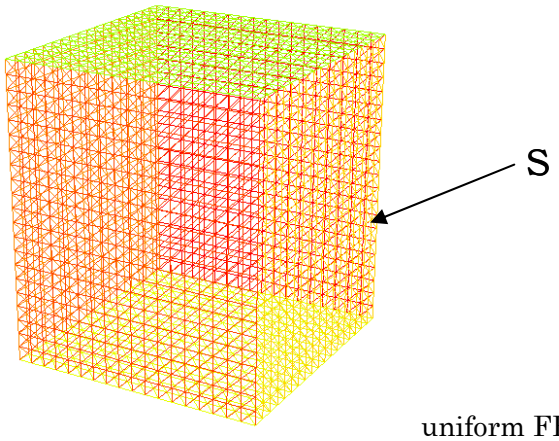
$$\nabla \cdot \nabla u = f \quad \text{in } \Omega \qquad (1)$$

$f = -1.0$

Boundary conditions are u = 0 on S.

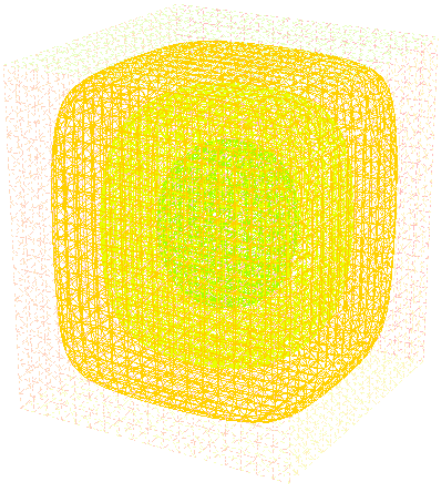
Poisson's equation is applied a wide range of problems including electric potential calculation.

Morphology primitive "cuboid" is used for mesh structure. To run FreeFem++ code, function program cube.idp is necessary to be installed in the same directory



uniform FEM mesh structure Ω

nx=19,ny=19,nz=21



isosurface plot