LAB 2: 2D ELLIPTIC PROBLEMS

Download from http://campus.cib.unibo.it/cgi/lista (ricerca per docente -> Lanza) the **FEA_LAB2.zip** file, then unzip it.

In FreeFem++, find approximate solutions of the following 2-D elliptic BVP (Boundary Value Problem) by means of the GFEM (Galerkin Finite Element Method) with linear and quadratic elements:

1) Homogeneous Dirichlet BVP:

$$\begin{cases} -\Delta u(x,y) = f(x,y) & (x,y) \in \Omega = unit\ circle \quad Poisson's\ equation \\ u(x,y) = 0 & (x,y) \in \partial\Omega \qquad Homogeneous\ Dirichlet\ Boundary\ Conditions \end{cases}$$

      where $f(x,y) = 1$

Compare the approximate solutions obtained by changing the domain triangulation (compute the L^2 and H^1 errors) with the exact solution:

$$u(x,y) = \frac{1 - x^2 - y^2}{4}$$