**04 - TGV**

Reference TGV with sin·cos normal creation in a 2pix2pi domain.

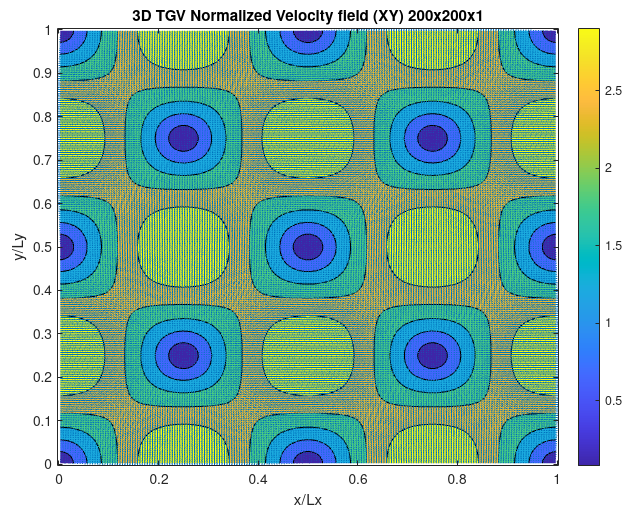
u = U\_0\*cos(X).\*sin(Y);

v = -U\_0\*sin(X).\*cos(Y);

w = u\*0;

P = P\_0 + rho\_0.\*(U\_0\*U\_0/4).\*(cos(2\*X) + cos(2\*Y));

T = P./(rho\_0\*R\_specific);

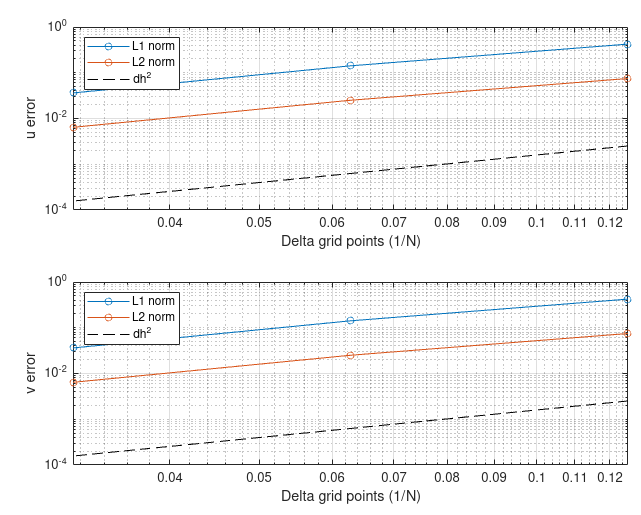
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1. **Spatial order of accuracy**

Results should show order 2, for mesh with lower than 50 grid points the order was ~1. However with mesh >50 Ngrid points results turn up to be the expected second order. In fact, they show ~1.8, but if 50 grid point is removed, the order is exactly 2. Time step was fixed to 2e-5 for all simulations to keep CFL always below 0.3 at least, hence avoiding unstabilities.

u2 L2 norm error = 0.0748 0.0251 0.0064 for 50,100 and 200 respectively.

Hence doing the ratio of first 2 gives 2.98, however on last 2 the error is reduced 3.921 (2^4) as expected.



1. **Validation with exact solution**

