

0.4 Geometry

| | | | | |
|----------------|-------------------|---|--|------------|
| xc, yc | | x, y | position in x and y directions | center |
| xdu | dx/LEN | x_ξ | | center |
| xdv | | x_η | | center |
| ydu | | y_ξ | | center |
| ydv | dy/LEN | y_η | | center |
| ux | ydv/J2d | ξ_x | | center |
| vx | -ydu/J2d | η_x | | center |
| uy | -xdv/J2d | ξ_y | | center |
| vy | xdu/J2d | η_y | | center |
| wx | | σ_x | | center |
| wy | | σ_y | | center |
| wz | | σ_z | cell thickness | center |
| wzk | | σ_z | | face z |
| D | | z | depth of the 0-th face z | center |
| zc | | z | depth | center |
| zf | | z | depth of the face z | face z |
| Jac | J2d/wz | volume | volume of the cell | center |
| Jifc | | volume | interpolation of Jac on the face x. | face x |
| Jjfc | | volume | interpolation of Jac on the face y | face y |
| J2d | xdu.ydv - xdv.ydu | area | Area of the face z. | 2D, center |
| g11 | ux.ux+uy.uy | $\xi_x \cdot \xi_x + \xi_y \cdot \xi_y$ | | center |
| g12 | ux.vx+uy.vy | $\xi_x \cdot \eta_x + \xi_y \cdot \eta_y$ | | center |
| g22 | vx.vx+vy.vy | $\eta_x \cdot \eta_x + \eta_y \cdot \eta_y$ | | center |
| gi(:, :, 1) | | | g11 (interpolated at the face x) \times Jifc | face x |
| gi(:, :, 2) | | | g22 (interpolated at the face x) \times Jifc | face x |
| gj(:, :, 1) | | | g12 (interpolated at the face y) \times Jjfc | face y |
| gj(:, :, 2) | | | g22 (interpolated at the face y) \times Jjfc | face y |
| gqi(:, :, 1:2) | | | qpr \times gi(:, :, 1:2) | face x |
| gqj(:, :, 1:2) | | | qpr \times gj(:, :, 1:2) | face y |
| gqk(:, :, 1:3) | | | ? | face z |
| g13 | ux.wx+uy.wy | $\xi_x \cdot \sigma_x + \xi_y \cdot \sigma_y$ | | center |
| g23 | vx.wx+vy.wy | $\eta_x \cdot \sigma_x + \eta_y \cdot \sigma_y$ | | center |
| gi3 | | | g13 (interpolated at the face x) \times Jifc | face x |
| gj3 | | | g23 (interpolated at the face y) \times Jjfc | face y |
| gqi3 | | | qpr \times gi3 | face x |
| gqj3 | | | qpr \times gj3 | face y |