MEQ Geometry cheatsheet
This cheatsheet provides help to beginner users trying to understand MEQ `G` (geometry) structure variable naming. In general, naming follows a strict convention that is explained in `meqhelp.m`. For output quantities, see `meqt.m` Also please consult the [README.md](../README.md) file for more help sources.
See also `meqg.m`, `vveig.m`

Quantities are part of the `L.G` structure unless specified otherwise.

Computational grids
Variable name	Description
`LY.Fx`	flux on the `x` grid
`LY.Brx`	Radial magnetic field on the `x` grid
`LY.Bzx`	Verical magnetic field on the `x` grid
`LY.Iy`	plasma current on `y` grid
`rx`	r coordinate of `x` grid (computational grid inside limiter)
`zx`	z coordinate of `x` grid (computational grid inside limiter)
`L.nzx`	number of `zx` elements
`L.nrx`	number of `rx` elements
`L.rrx`	r of meshgrid for `rx,zx`
`L.zzx`	z of meshgrid for `rx,zx`
`rz`	r coordinate of `z` grid (extended outside limiter for post-processing)
`zz`	z coordinate of `z` grid (extended outside limiter for post-processing)
`ry`	reduced grid for plasma current: `rx(2:end-1)`
`zy`	reduced grid for plasma current: `zx(2:end-1)`
`Mxx`	mutual indutance between filaments on plasma `x` grid

Magnetic probes
Variable name	Description
`rm`	r position of magnetic field measurement point
`zm`	z position of magnetic field measurement point
`am`	orientation (in rad), positive counterlockwise so that `Bm = cos(am)*Br + sin(am)*Bz`
`Tmm`	Matrix to compose effective probe measurements as linear combinations of ideal ones.
`Bma`	transfer function that gives measured B fields at mag. probes due to currents in active coils `Bm = Bma*Ia`
`Bmx`	same as `Bma` but for `Ix` currents in the plasma grid
`Bmu`	same as `Bma` but for `Iu` passive currents
`dimm`	description string
`nm`	number of probes

Flux loops
Variable name	Description

`rf`	r position of flux loops
`zf`	z position of flux loops
`Tff`	Matrix to compose effective flux measurements as linear combinations of ideal ones.
`Mfa`	mutual inductance between flux loops and active coils (`Mfa*Ia` is flux measured at each loop due to current)
`Mfv`	mutual inductance between flux loops and filamentary vessel
`Mfu`	mutual inductance between flux loops and generalized vessel
`Mfx`	mutual inductance between flux loops and plasma current elements
`dimf`	flux loop labels
`nf`	number of flux loops

Active circuits
Variable name	Description
`LY.Ia`	active coil currents
`Maa`	mutual inductance between active circuits
`Mav`	mutual inductance between active circuits and vessel filament elements
`Mau`	mutual inductance between active circuits and generalized vessel
`Mxa`	mutual inductance between `x` grid and active circuits
`Mza`	mutual inductance between `z` grid and active circuits
`Brxa`	matrix such that `Br = Brxa*Ia`. Where `Br` is the radial magnetic field on the `x` grid due to currents in the active circuits
`Bzxa`	Same as `Brxa` but for vertical component of poloidal field
`dima`	active coil labels
`na`	number of active circuits

Vessel filamentary description
Variable name	Description
`LY.Iv`	Vessel filament currents
`Mvv`	mutual inductance between vessel filaments
`Rv`	resistance of individual vessel elements
`rv`	`r` location of filament
`zv`	`z` location of filament
`hv`	height of rectangular filament (`dv=NaN`)
`wv`	width of rectangular filament (`dv=NaN`)
`dv`	diameter of circular filament (`wv=hv=NaN`)
`dimv`	description label

Vessel filamentary description
Variable name	Description
`LY.Iv`	Vessel filament currents
`Mvv`	mutual inductance between vessel filaments
`Rv`	resistance of individual vessel elements
`rv`	`r` location of filament
`zv`	`z` location of filament
`hv`	height of rectangular filament (`dv=NaN`)
`wv`	width of rectangular filament (`dv=NaN`)
`dv`	diameter of circular filament (`wv=hv=NaN`)

| `dimv` | description label |

Generalized vessel

Variable name	Description
`LY.Iu`	generalized vessel currents
`Tvu`	matrix such that `Iv=Tvu*Iu`
`Tuv`	matrix premultiplying vessel current equation such that `Muu=Tuv*Mvv*Tvu` (see `vveig.m`)
`Mxu`	mutual inductance between `x` grid and vessel currents
`Mzu`	mutual inductance between `z` grid and vessel currents
`Muu`	mutual inductances for generalized passive currents
`Mau`	mutual inductances between generalized passive currents and active coil currents
`Brxu`	matrix such that `Br = Brxu*Iu`. Where `Br` is the radial magnetic field on the `x` grid due to currents in the vessel currents
`Bzxu`	same as `Brxu` but for vertical component of poloidal field
`Brzu`	matrix such that `Br = Brzu*Iu`. Where `Br` is the radial magnetic field on the `z` grid due to currents in the vessel currents
`Bzzu`	same as `Bzzu` but for the vertical component of the poloidal field
`Ru`	resistances for generalized vessel description
`dimu`	description label