metrix

Calculates the metric quantities required for volume integrals.

[called by: ma00aa.] [calls: coords.]

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1.1 metrics

1. The Jacobian, \sqrt{g} , and the 'lower' metric elements, $g_{\mu\nu}$, are calculated by coords, and are provided on a regular grid in 'real-space', i.e. (θ, ζ) , at a given radial location, i.e. where s is input.

1.2 plasma region

1. In the plasma region, the required terms are $\bar{g}_{\mu\nu} \equiv g_{\mu\nu}/\sqrt{g}$.

$$\sqrt{g} g^{ss} = (g_{\theta\theta}g_{\zeta\zeta} - g_{\theta\zeta}g_{\theta\zeta})/\sqrt{g}$$

$$\sqrt{g} g^{s\theta} = (g_{\theta\zeta}g_{s\zeta} - g_{s\theta}g_{\zeta\zeta})/\sqrt{g}$$

$$\sqrt{g} g^{s\zeta} = (g_{s\theta}g_{\theta\zeta} - g_{\theta\theta}g_{s\zeta})/\sqrt{g}$$

$$\sqrt{g} g^{\theta\theta} = (g_{\zeta\zeta}g_{ss} - g_{s\zeta}g_{s\zeta})/\sqrt{g}$$

$$\sqrt{g} g^{\theta\zeta} = (g_{s\zeta}g_{s\theta} - g_{\theta\zeta}g_{s\zeta})/\sqrt{g}$$

$$\sqrt{g} g^{\theta\zeta} = (g_{s\zeta}g_{s\theta} - g_{\theta\zeta}g_{s\zeta})/\sqrt{g}$$

$$\sqrt{g} g^{\zeta\zeta} = (g_{ss}g_{\theta\theta} - g_{s\theta}g_{s\theta})/\sqrt{g}$$
(1)

1.3 FFTs

1. After constructing the required quantities in real space, FFTs provided the required Fourier harmonics, which are returned through global. (The "extended" Fourier resolution is used.)

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SPEC subroutines;