







WORLDWIDE



















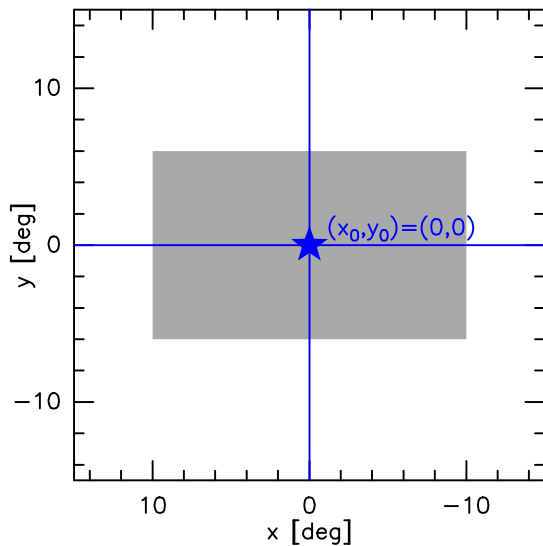
2020

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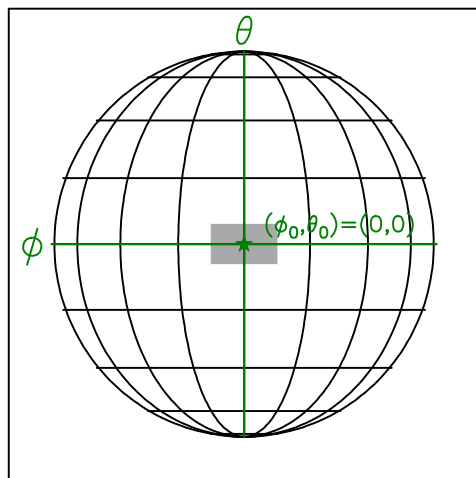




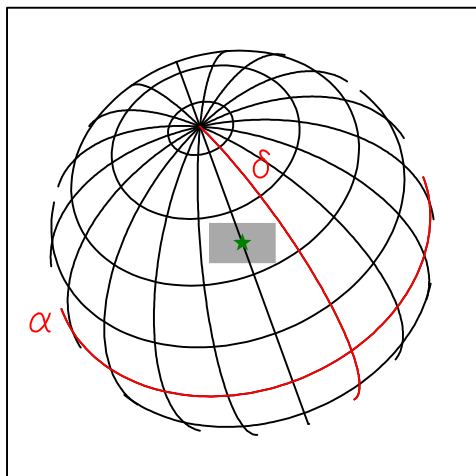
2D projected plane



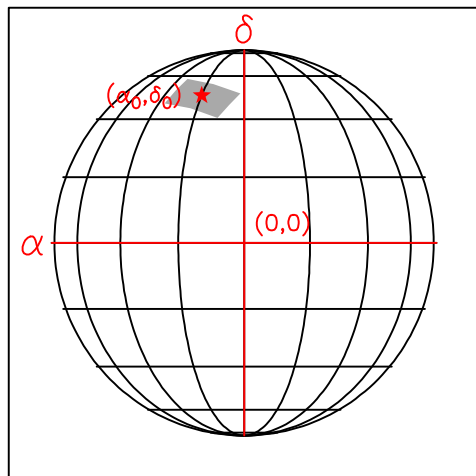
3D native sphere



3D celestial sphere



3D celestial sphere

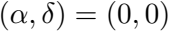




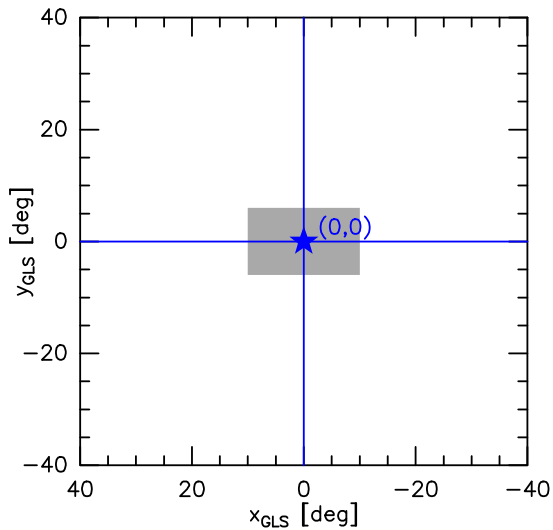




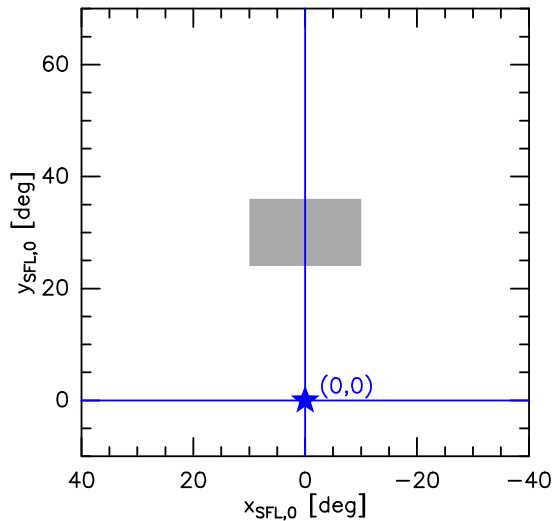




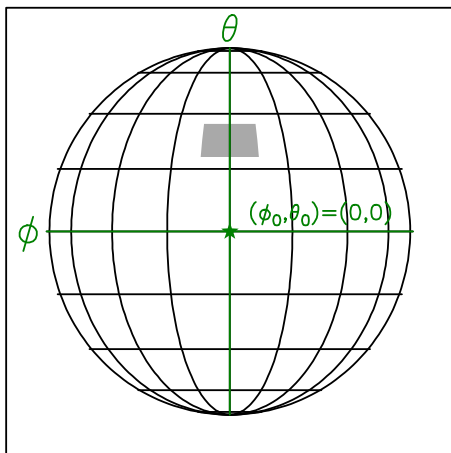
2D GLS projected plane



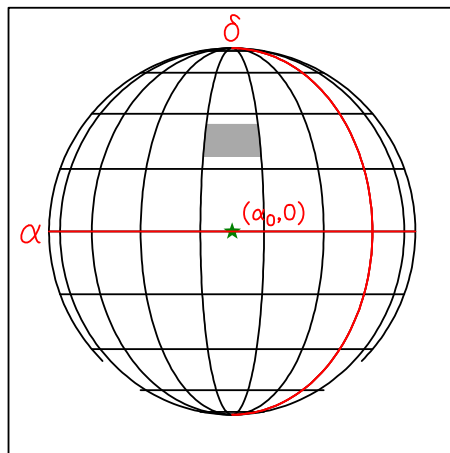
2D SFL projected plane



3D native sphere



3D celestial sphere





sin cos sin cos / sin cos sin cos



cos-1/sin

cos/sin



$$\tan \frac{\theta}{2}$$













$$\cos \theta = \sin \theta + \cos \theta$$

$$r_{\text{AIPS}} = 2 \frac{\sin \theta}{1 + \cos \theta}$$

$$r_{\text{AIPS}} = 2 \tan \frac{\theta}{2}$$

$$\tan x = \frac{\sin x}{\cos x} = \frac{2 \sin x \cos x}{2 \cos^2 x} = \frac{\sin 2x}{1 + \cos 2x}$$

1999-2000



















$$\phi_p = \begin{cases} 0^\circ & \text{for } \delta_0 \geq 0 \\ 180^\circ & \text{for } \delta_0 < 0 \end{cases}$$

911





$$\cos(\theta) + \cos^{-1}(\sin \theta)$$



0, cos p - 1 sin 0)











$$\delta_p = \begin{cases} \delta_{p,1} & \text{if } \delta_{p,1} > 0 \text{ and } \delta_{p,1} \leq 90^\circ \\ \delta_{p,2} & \text{otherwise.} \end{cases}$$





$$\alpha_p = \begin{cases} \alpha_0 + \phi_p - 180^\circ & \text{for } \delta_p = +90^\circ \\ \alpha_0 - \phi_p & \text{for } \delta_p = -90^\circ \\ \alpha_0 - \text{atan2}(0, -\frac{\sin \delta_p \sin \delta_0}{\cos \delta_p \cos \delta_0}) & \text{otherwise.} \end{cases}$$



x



$\cos y$





$$(-\cos \theta \sin(\phi - \phi_p), \sin \theta \cos \delta_p - \cos \theta \sin \delta_p \cos(\phi - \phi_p))$$



$$\sin^{-1}(\sin \theta \sin \phi_p + \cos \theta \cos \phi_p \cos(\phi - \phi_p))$$



$$(-\cos \delta \sin(\alpha - \alpha_p), \sin \delta \cos \delta_p - \cos \delta \sin \delta_p \cos(\alpha - \alpha_p))$$

$$\sin^{-1}(\sin \delta \sin \delta_p + \cos \delta \cos \delta_p \cos(\alpha - \alpha_p))$$













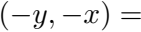
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1000

09110

$$\phi_{SFL,0} = \arctan2(-\cos \delta \sin(\alpha - \alpha_0 - 180^\circ), -\cos \delta \cos(\alpha - \alpha_0 - 180^\circ)) = \alpha - \alpha_0$$



1900 + 1900

QUESTIONS

$$\text{SPIL}_0 = \text{SPIL}_1 \text{ (sid)} = \text{sid}$$

2020

95% 100%

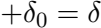




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POSTAL, POSTAL







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19

1

1

0

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0

(3600, -1800), (3600, +1800)

2009

