

Answer on Question #54950, Physics / Astronomy | Astrophysics

Let the latitude and declination be φ and δ degrees respectively. Then:

$$PF = PZ + ZF$$

that is:

$$90 - \delta = 90 - \varphi + ZF$$

or:

$$\varphi - \delta = 24^\circ$$

Also,

$$PG = ZG - PZ$$

giving:

$$90 - \delta = ZG - 90 + \varphi$$

or:

$$\varphi + \delta = 180 - 74^\circ = 106^\circ$$

Adding equations we obtain:

$$2\varphi = 130^\circ \text{ or } \varphi = 65^\circ N.$$

Substituting 65° for φ in equation gives $\delta = 41^\circ N$.

Answer: $\delta = 41^\circ N$