

Astronomical position determination

On November 27, 20:00 CET an observer at the approximate position

$$L_0 = 9^\circ.16, \quad B_0 = 48^\circ.75$$

with respect to GRS80 observes the following zenith-distances to two stars:

	star 1	star 2
α	18 h 19 min 47.7 s	18 h 57 min 52.2 s
δ	$56^\circ.73$	$37^\circ.9$
z	$8^\circ.05554$	$12^\circ.1871$

Determine the position of the observer with respect to the Rauenberg datum.

Use the following parameters and the following transformation parameters be-

Ellipsoid	a [m]	$\frac{1}{f}$
GRS80	6378137	298.257
Bessel1841	6377397.155	299.153

tween GRS80 and Rauenberg

t_x [m]	t_y [m]	t_z [m]	α ["]	β ["]	γ ["]	δm [ppm]
-588.196	-108.790	-378.506	-1.0778	0.5355	3.3964	11.99