Hs and time of meridian transit

Observación
Astro
t, Hs, Z

Least squares fitting
Hs = a0+a1*t+a2*t2

Maximum (upper transit):
t Hmax = -a1/(2a2)
Hs max = a0-a2t2
Minimum (lower transit):

Motion
R, V

Derivatives

dB/dt dL/dt
dDec/dt   dGHA/dt
dLHA/dt

Time of meridian transit

$$\Delta t = = 3600 \frac{180}{\pi} \left(\frac{dB}{dt} - \frac{dDec}{dt} \right) \frac{TAN(\,B\,) - TAN(\,Dec\,)}{\left(\dfrac{dLHA}{dt} \right)^2}$$

t(mt) = t(Hmax) + Δt

H meridian transit

Hs = Hs(t mt)
Ho

Position

B(t mt) = f(Dec, Ho, culmination, transit)
L(t mt) = f(GHA, transit)