If an error of 0.2 is significant the expression for the parallax in altitude for the Moon should include a small correction OB for the oblateness of the Earth as follows:

$$PA = HP \cos H + OB$$

where $\quad OB = -0°0032 \sin^2 Lat \cos H + 0°0032 \sin (2Lat) \cos Z \sin H$

At mid-latitudes and for altitudes of the Moon below $60°$ a simple approximation to OB is

$$OB = -0°0017 \cos H$$