

is also equal to line  $EM$ . Line  $TH$  is also equal and parallel to line  $EG$ , hence line  $DZ$  is parallel to line  $MN$ .<sup>131</sup> So, angle  $EMN$  is equal to angle  $EDZ$ , hence arc  $SLN$  is similar to arc  $BGZ$ , so the remaining arc  $MN$  is similar to the remaining arc  $DZ$ .

[15]

We should also achieve our aim by showing how we draw the circles whose situation relative to the circle through the signs is as that of the circles previously mentioned relative to the equator, so that we can set out the stars whose positions are observed and determined in their measure according to this sphere without, first, using their sides in their measure according to the equator.<sup>132</sup>

So, first, let the equator, one of the circles set out on the plate, be circle  $ABGD$  [15.2] around center  $E$ , and the ecliptic circle  $ZBD$ , and the straight line that goes through [See Fig. 10] both two poles line  $ZAEHG$ , and the line passing through the place of intersection with the equator line  $BED$ . If we cut off arc  $BT$  and we make it equal to the arc between the poles of the equator and the circle through the signs, and we join line  $DKT$ , then point  $K$  is functionally a correlate of the pole of the circle through the signs.<sup>133</sup> Clearly, this is in accordance with what we explained.

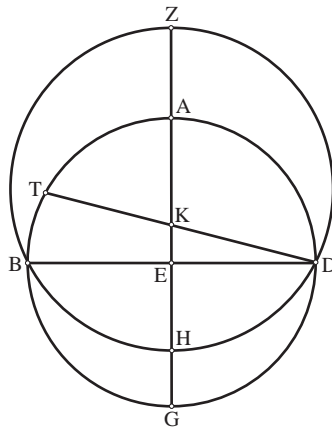


Figure 10: *Planisphere* 15.

The circles passing through this point and diametrically opposite points on the circle through the signs are bisectors of the equator as well. These drawn circles are those that stand in for the great circles perpendicular to the ecliptic, because [15.3]

<sup>131</sup>Since  $\triangle DTH$  is congruent with  $\triangle EMG$ .

<sup>132</sup>The term “sides” (اضلاع) indicates that the coordinates of a star were regarded as the sides of a spherical quadrilateral.

<sup>133</sup>Again, it seems strange to claim that point  $K$  is the “correlate ... functionally” (نظيرة ... بالقوة), since it is indeed the correlate (see page 84).