CORRIGENDUM TO THE PAPER CS. VINCZE AND Á. NAGY, AN INTRODUCTION TO THE THEORY OF GENERALIZED CONICS AND THEIR APPLICATIONS

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In case of the unit sphere S_k in the coordinate $(k+1)$ - plane $(x^1,\ldots,x^{k+1},0,\ldots,0)$ the function measuring the average distance is

$$A_k(\mathbf{x}) := \frac{1}{\text{Vol } S_k}\int_{S_k}\|\mathbf{x}-\gamma\|\,d\gamma = \frac{1}{\text{Vol } S_k}\int_{S_{k-1}}\left(\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}}\sqrt{D(\mathbf{x},\gamma,v)}\cos^{k-1}(v)\,dv\right)d\gamma, \quad \text{where}$$

$$D(\mathbf{x},\gamma,v) := \sum_{i=1}^{k}(x^i-\gamma^i\cos(v))^2+(x^{k+1}-\sin(v))^2+(x^{k+2})^2+\ldots+(x^n)^2.$$

The intersections of conics of the form $A_k(\mathbf{x}) = \text{const.}$ with the plane $x^1=\ldots=x^k=0$ and $x^{k+3}=\ldots=x^n=0$ are the levels of the function

$$f_k(y,z) = \int_{-\frac{\pi}{2}}^{\frac{\pi}{2}}\sqrt{1+y^2+z^2-2y\sin t}\,\cos^{k-1}t\,dt$$

with variables $y := x^{k+1}$ and $z := x^{k+2}$, respectively. It can be considered as a correction of the variables in [1], p. 820.

References

[1] Cs. Vincze and Á. Nagy, An introduction to the theory of generalized conics and their applications, Journal of Geom. and Phys. Vol. **61** (2011), 815-828.

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