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A Spatial Version of the Theorem of the Angle of Circumference

The presented spatial version of the theorem of the angle of circumference in three-dimensional Euclidean space deals with pairs of planes (ε, ϕ) passing through two skew straight lines e and f, respectively, such that the angle α enclosed by ε and ϕ is constant. It turns out that the set of intersection lines $r = \varepsilon \cap \phi$ is a quartic ruled surface Φ with $e \cup f$ being its double curve. We analyse the properties of Φ and discuss the special cases showing up for special values of some shape parameters such as the slope of e and f (with respect to a fixed plane) or the angle α.

Keywords: Ruled surface, angle of circumference, quartic ruled surface, Thaloid, isoptic surface.

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