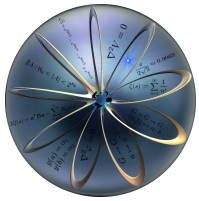

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Plücker's conoid

Canonical name	PluckersConoid
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Synonym	Plucker's conoid
Synonym	Plücker conoid
Synonym	Plucker conoid
Synonym	conical wedge
Synonym	conocuneus of Wallis
Synonym	Wallis conocuneus

Plücker's conoid is a ruled surface that results from taking a straight line connected to an axis, rotating it about that axis and moving it straight up and down the axis to give the desired number of folds. Being an example of a right conoid, Plücker's conoid is sometimes called a conical wedge, or a conocuneus of Wallis or even a cylindroid.

The Cartesian equation for a conoid with two folds is $z = \frac{x^2-y^2}{x^2+y^2}$. This can be generalized to any desired number n of folds as $x(r,\theta) = r\cos\theta$, $y(r,\theta) = r\sin\theta$ and $z(r,\theta) = c\sin(n\theta)$. Plücker's conoid has applications in mechanical drafting.

References

[1] J. Plücker, "On a new geometry of space", *Philosophical Transactions of the Royal Society of London* **155** (1965): 725 - 791

[2] S. P. Radzevich, "A Possibility of Application of Pliicker's Conoid for Mathematical Modeling of Contact of Two Smooth Regular Surfaces in the First Order of Tangency", *Mathematical and Computer Modelling* **42** (2005): 999 - 1022