

# The Desargues-Kurpishev Theorem: Harmonic Foundation of the Reper Quadruple

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## Abstract

This article formulates the Desargues-Kurpishev Theorem as the geometric basis of the fourth harmonic point of sufficient foundation.

### 1. Centers of conics

Let  $Q_1, Q_2$  be non-degenerate conics and  $p$  a support line. Their centers are poles:

$$O_i = [Q_i^{-1}l_p].$$

### 2. Central axis and harmonic point

$$l_O = O_1O_2,$$

$$D = H_{A,C}(B),$$

$$\text{cr}(A, C; B, D) = -1.$$

Matrix compatibility:

$$\det(Q_1^{-1}l_p, Q_2^{-1}l_p, H_{A,C}(B)) = 0.$$

### 3. Theorem

In an admissible projective-Reper configuration of two conics, a support line and a triple  $A, B, C$ , there is a unique fourth harmonic point  $D$  closing the incomplete flag into a Reper quadruple.

### 4. Logical reduction

Every correct inference has a complex projective-harmonic structure. Three laws of logic give a flag; sufficient foundation gives  $D$ .

### 5. Conclusion

The law of sufficient foundation obtains a projective-geometric form.

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