

Algebraic Geometry - Mariusz Koras in memoriam

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THE POLAR GROUP OF A REAL FORM OF AN AFFINE \mathbb{C} -VARIETY

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ABSTRACT. Over several years, Koras together with Cassou-Nogues, Palka and Russell worked to classify embeddings of \mathbb{C}^* in \mathbb{C}^2 . This classification was completed only recently. Using their classification, the author shows that any polynomial embedding of the real 1-sphere \mathbb{S}^1 in \mathbb{R}^2 is equivalent to the standard embedding. Polar groups of real forms are introduced for this proof. This group is a natural invariant of a real form of an affine \mathbb{C} -variety, and it will be discussed in this talk. In addition, we conjecture that (1) all polynomial embeddings of \mathbb{S}^1 in \mathbb{R}^3 are equivalent, and (2) the torus $\mathbb{S}^1 \times \mathbb{S}^1$ does not admit a polynomial embedding in \mathbb{R}^3 .