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Elliptic complex numbers

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Abstract

In this talk we generalize the ordinary complex numbers $z = x + iy$. In this generalization the imaginary unit i satisfies the relation $i^2 = -\alpha - \beta i$, where α and β are real numbers. Note that when $\alpha = 1$ and $\beta = 0$ this algebra reduces to the ordinary complex numbers. In case α and β satisfy the so-called ellipticity condition $4\alpha - \beta^2 > 0$ the corresponding numbers are called elliptic complex numbers. Every elliptic complex number different from zero is invertible because the polynomial $x^2 - \beta xy + \alpha y^2$ vanishes only at the origin under the ellipticity condition. We will discuss some properties of elliptic complex numbers.