

Equivariant almost complex structure on quasi toric manifolds.
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Abstract: Main examples of quasi toric manifolds are given by smooth toric algebraic varieties, which both carry a nice action of a torus. Smooth algebraic toric varieties do come naturally with a complex structure. Actually, they are complex manifolds and their tangent bundle is an equivariant complex bundle. In this talk we will consider the question, whether the a quasi toric manifold carries an (equivariant) almost complex structure, i.e. whether the tangent bundle can be made into an (equivariant) complex vector bundle. We will give sufficient and necessary condition for this and give a complete classification of all equivariant almost complex structures of quasi toric manifolds. In particular, we will show that there exist exactly two equivariant almost complex structures on the complex projective space $\mathbb{C}P^n$, namely the standard one and the complex conjugate one.

Pre-requisites :