

Results related with complex structures on S^6

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It is a longstanding problem that whether there exists a complex structure on the 6-dimensional sphere? Many famous mathematicians have made efforts on this problem, such as Hopf, Wen-tsun Wu, Borel, Serre, LeBrun, Shiing-Shen Chern, Atiyah, etc. This talk consists of two parts. (i) Taking advantage of isoparametric theory, we construct complex structures on certain isoparametric hypersurfaces in the unit sphere. As a consequence, there is a closed 8-dimensional manifold N^8 such that there exists a complex structure on $S^6 \times N^8$. (ii) As a generalization of LeBrun's result, we prove that there is no orthogonal almost complex structure on the standard S^6 with the length of Nijenhuis tensor is smaller than a certain constant everywhere. This talk is based on joint works with Professor Zizhou Tang.

报告人简介：彦文娇，北京师范大学数学科学学院教授，博导。主要研究微分几何，特别是等参理论的研究与应用。代表性成果包括完全解决了等参情形的丘成桐第一特征值猜想，给出 Besse 在经典专著《爱因斯坦流形》中挑战性问题的系列单连通例子，给出陈省身猜想的任意维数的最新进展等。2017 年获得国家优秀。