東北大学大学院情報科学研究科
純粋・応用数学研究センター

情報数理談話会のお知らせ

日　時：　2015 年 12 月 11 日 (金) 15:30 — 16:30
(会場にお茶を用意しております)
場　所：　東北大学大学院情報科学研究科棟 2 階大講義室

講演者：　孫 立杰 氏（東北大学大学院情報科学研究科）
題　目：　Discreteness of subgroups of complex hyperbolic isometries

備　考：　この情報数理談話会は課程博士予備審査会を兼ねています

[概 要] Rank one symmetric spaces of non-compact type are real, complex and quaternionic hyperbolic spaces and the Cayley hyperbolic plane. Real hyperbolic geometry has been very familiar. We will see that the basic formalism and many results from real hyperbolic geometry carry over to the complex hyperbolic case, such as Jørgensen's inequality and Shimizu's lemma.
At this talk, we will concentrate on the discrete subgroups of complex hyperbolic isometries. Firstly, two-generator subgroup will be considered. We will start with characterizing Dirichlet domains and Ford domains of regular ellptic or loxodromic generator cyclic groups, then will use Klein's combination theorem to examine whether a two-generator subgroup is discrete. After that, we will investigate the discreteness of complex hyperbolic triangle groups. They are quite different from real hyperbolic triangle groups, which are always discrete. It is not easy to show a group to be discrete, therefore we restrict the range to search for discrete groups by finding the non-discrete case about complex hyperbolic triangle group of type (m, n, ∞), which will be parametrized by angular invariant θ. We will give three explicit non-discrete conditions in the form of m, n, θ and will get more explicit conclusions about the triangle groups of type (n, ∞, ∞). At last, Poincaré's polyhedron theorem as vital important tool to verify the discreteness of a subgroup will be considered. The polyhedron we construct is bounded by bisectors. We will see a particular form originally proposed by Mostow, and will prove it in the same fashion with real hyperbolic case. Then we will apply it to investigation of the discrete and faithful representations of complex hyperbolic triangle groups.

ホームページ：http://www.math.is.tohoku.ac.jp/research/colloquium.html