

様式 2 帰国報告書 (ITP Research Report)

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Research Report of JSPS-ITP

(The international sending-elevating project for young mathematicians based on singularity, topology and mathematical analysis: Hokudai model)

Name: Mayuko Kon

Name of ITP Partner Institute: National University of Singapore

Period of ITP-Stay: From April 6 to June 5.

Research Report:

I had stayed at mathematical department of National University of Singapore for about two month. They gave me an opportunity to talk at "Topology & Geometry". The title of my talk was "Minimal submanifolds immersed in a complex space form". I discussed about some concrete problems of submanifolds in a complex space form with Professor Leung. Our first topic was the pinching problems for compact submanifolds in a complex projective space. As Professor Leung's advice, I read some papers about submanifolds in a sphere to get some ideas on computation. I refer to Gauchman's results to prove some pinching theorems for compact minimal submanifolds in a complex projective space with respect to the second fundamental form in the maximal direction. However, the direct application of Gauchman's method had some difficulties. On the other hand, as another approach to study submanifolds in a complex space form, I researched about g -Tanaka-Webster connection. Originally, Tanaka-Webster connection is defined as a canonical affine connection on a non-degenerate pseudo-Hermitian CR manifold. Recently, g -Tanaka-Webster connection for real hypersurfaces of Kaehlerian manifolds, which is an extension of Tanno's generalized Tanaka-Webster connection are studied. I got partial result about the Ricci tensor of hypersurfaces in a complex space form with respect to this connection. Moreover, I proved that the shape operator of a real hypersurface in a complex projective space is parallel with respect to the generalized Tanaka-Webster connection if and only if the real hypersurface is locally congruent to type A1, type A2 or type B.

It was so nice and valuable experience to stay at National University of Singapore. I would like to express my gratitude to Prof. Leung for his help. And I am much obliged to this program for giving me such a great opportunity.