

Research Report of JSPS-ITP

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

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Research Report:

I visited ICMC (Institute of Mathematics and Computer Sciences) in the University of Sao Paulo, Sao Carlos, Brazil.

The purpose of the stay was that I participate in the international workshop "10th International Workshop on Real and Complex Singularities". In that workshop, I listened to state-of-the-art study results of the singularity theory and got a chance to announce my study as a poster session.

- The theme of my study is differential geometry of submanifolds in Euclidean n -sphere as application of singularity theory. There are a lot of results in differential geometry of submanifolds in Euclidean sphere by many mathematicians, and I study what interpret those results from the viewpoint of singularity theory.

Now I study the singularities of Gauss maps and evolutes of hypersurfaces, which appear as discriminant (bifurcation) set of families of height functions.

- Professor Farid Tari (Durham University) talked about the projections of surfaces in the Minkowski space in the workshop. The singularities of them are related to the de Sitter or lightcone Gauss maps. Moreover he talked about the results on duality of bifurcation sets of the families of projections. I am interested in duality of bifurcation set of height functions, so I was interested in that talk.

- After the workshop, Dr. Declan Davis (The University of Liverpool) and Professor Maria Aparecida Ruas (University of Sao Paulo) gave me the chance to have a talk about my study in ICMC. That was very good experience for me.

- In the stay, I learned firsthand that I really need a lot of knowledge that is necessary to understand lectures, and English skills (hearing and speaking).

The experience was very good for me to do more diligently to progress my study and to develop my English ability.

• Finally, I wish to express my gratitude to ITP. Thank you very much for ITP support.