

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)

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Period of ITP-Stay: July 9 --- July 21, 2009.

Research Report:

Thanks to the support from the ITP project in Hokkaido University, I visited Warsaw and Kazimierz Dolny, Poland. The main purpose of this travel was to participate in the conferences “School on Generic Singularities in Geometry” held in Warsaw, and “Geometric Singularity Theory: Polish-Japanese Singularity Theory Working Days” held in Kazimierz Dolny. In those conferences, I gave a talk and learned a lot as usual. As well as them, according to the visions of the project, I tried to give younger colleagues some useful information, and tried to be a world-wide leader of my subject “Engel topology”.

I gave a talk in the second conference under the title “Engel geometry from a flexible view point.” Engel structure has been studied for a long time from a differential geometric point of view. To give the study a new perspective was one of the goals of my talk. From a differential topological point of view, I talked on the following two subjects. First, I introduced a new notion, second round handle decomposition of closed parallelizable 4-dimensional manifolds, which hopefully must be closely related to Engel structures. Next, I introduced the notion of convex hyper surfaces in Engel manifolds which is flexible and an important tool to construct Engel structures. Some of the audiences must have gotten interested in the Engel structure.

During the stay, I discussed on various subjects. The followings are some of them. I discussed with Prof. Romero Fuster on surgeries of manifolds, and Legendrian knots in higher dimensional contact manifolds. With Prof. Sato on homotopy classes of framings and Engel structures. With Prof. Mormul on Engel structure as a Goursat structure, ..., etc.

According to the visions of the project, I tried to perform the following things. I tried to share my experience with younger colleagues. Since they were fine, I had almost nothing to do. And, I tried to lead my subject “Engel topology.” In the beginning of my talk, I gave a rough status of the study of “Engel geometry” for the convenience of audiences. I was invited to Warsaw University to give a mini course on “Engel geometry” few years ago. The audiences who attended both of them could feel some developments in the field.

Thanks to the ITP project, I had a good experience. It must give a good influence in my study. Making use of this experience, I will contribute to mathematical activities in the world.