

様式 2 帰国報告書 (ITP Research Report)

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 MSRI (Mathematical Sciences Research Institute), University of California, Berkeley to take part in the international workshop "Exterior Differential Systems and the Method of Equivalence".

My study is the differential geometry, the theory of exterior differential systems, especially Tanaka theory (we call it EDS for short). It is one of the best theory to study the differential equations. The things I am interested in are as follows;

- (1) Application to partial differential equations(PDE),
- (2) Singularity of EDS.

(1) T. Ivey (from college of Charleston) talked about the relationship Darboux integrability(DI) and Backlund transformation(BT) for Monge-Ampere equations(MA) in this workshop. DI and BT are the method of solving PDE using ordinary differential equations(ODE). This study is originated from my counter example.

After his talk, we discussed the extension of the theorem to higher dimension, more specifically, there is the contact form in the MA case. It is essential. So our problem is What is the "contact form" in the general case?

(2) P. Vassiliou (from university of Canberra) gave the characterization of the extended Goursat normal form (or partial prolongation) in this workshop, but his result does not contain the singularity. There is our study [SY] of the singularity of the Goursat normal form. I think the next problem is to consider the singularity of the extended Goursat normal form.

Finally, thank you for ITP support!!

[SY] Shibuya, K. and Yamaguchi, K.: Drapeau theorem for differential systems, preprint