Plan

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My research thema is geometric study of partial differential equations. My plan is as follows.

1. Study of singularities of second order PDE.
As I mentioned in the Result, in [3] we formulated the notion of solutions of second order regular PDEs from a view point of contact geometry of second order. In particular, we defined three types of solutions which are called regular solutions, singular solutions and parabolic solutions. Among these solutions, we will study singular solutions. More precisely, we will consider the theory of construction of singular solutions and geometric properties of these solutions.

2. Study of Monge characteristic systems for type-changing equations.
In [3], Noda and Shibuya studied fundamental properties of type-changing equations. Recently, we discovered that we can formulate the notion of Monge characteristic systems for type-changing equations in terms of Monge characteristic systems of locally parabolic equations. Hence, by using the formulation of these characteristic systems, we will study the structure of type-changing equations and their solutions more deeply.