Title: Geometric characterization of Monge-Ampere equations

Speaker: Atsushi Yano (Hokkaido Univ.)

Abstract: It is well known that a Monge-Ampère equation can be expressed in terms of exterior differential system—Monge-Ampère system, which is the ideal generated algebraically by a contact form and a 2-form and its exterior derivatives on a 5-dimensional contact manifold, and the system is independent of the choice of coordinate system. On the other hand, a single second order partial differential equation of one unknown function with two independent variables corresponds to the differential system on a hypersurface of Lagrange-Grassmann bundle over a 5-dimensional contact manifold obtained by restricting its canonical system to the hypersurface. However, from the viewpoint of differential system, geometric characterization of Monge-Ampère equations among second order partial differential equations has not been given yet. The author studied the relation between Monge characteristic systems of Monge-Ampère equation and those of Monge-Ampère system and particularly analyze structure equations of those systems. This observation leads to the result—to characterize Monge-Ampère equation by the property that the certain differential system defined from the Monge characteristic system drops down to the contact manifold.