Research Plan

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The higher order differential equations with Painlevé property should be investigated in view of the degeneration and with relation to moduli space of linear connections.

The degeneration process of the Painlevé systems, as a limit of the specific change of parameters and variables, can be applied to the space of initial conditions or the Bäcklund transformations associated to those systems. It reflects the symmetric and hierarchical structure between Painlevé systems.

The Okamoto space of initial conditions of Painlevé equation can be considered as a moduli space of certain parabolic stable linear connections. I want to investigate higher order Painlevé equations and (degenerated) Garnier systems from such a geometric view.

As preparatory calculation, explicit families of the linear connection with certain spectral type are being constructed by introducing the apparent singularity of the associated meromorphic connection as a coordinate of the two-dimensional moduli space.