Our Plans for Research (Nobutaka Boumuki)

We plan to achieve the following (A) and (B) in this season:

(A) Clarifying relation between normalized potentials for harmonic maps and normalized (1,0) & (0,1)-potentials for Lorentzian harmonic maps;

(B) Finishing writing a paper about reflective submanifolds.

We tell about (A) first, and about (B) afterwards.

(A): On the hand, DPW method (J.Dorfmeister, F.Pedit & H.Wu, Comm. Anal.Geom., 1998) implies that each harmonic map from $\mathbb{R}^2$ into compact symmetric spaces (e.g., sphere S^2) is essentially constructed from a normalized potential. On the other hand, M.Toda (Balkan J.Geom.Appl., 2002) asserts that each Lorentzian harmonic map from Minkowski plane R_1^2 into a pseudo-sphere S_1^2 is essentially constructed from a pair of a normalized (1,0)-potential and a normalized (0,1)-potential. Notice that a sphere S^2 is related with a pseudo-sphere S_1^2 via the Noda correspondence. We guess that in some cases, one could obtain normalized (1,0) & (0,1)-potentials (for Lorentzian harmonic maps) from the Noda correspondence and normalized potentials for harmonic maps.

Now let us tell about (B).

(B): We have already worked out a detailed plan for a paper about reflective submanifolds of affine symmetric spaces. So we will finish writing a paper if time permits.