

## List of problems

- i. What other matter models for the Einstein's equations lead to geometric problems involving symmetric spaces?
  - a. Einstein-Yang-Mills equations
- ii. Can you generalize the dressing method to Lie groups where the involutions are not given by conjugation with respect to the same element?
- iii. Understand the choice of the algebraic curve that appears in the setup.
- iv. Understand the choice of functions  $a$ ,  $b$  and  $w$ .
- v. Come up with a dressing procedure that allows the addition of real poles (and therefore be able to get black hole solutions)
- vi. Understand the relevance of the Iwasawa decomposition to Einstein's equations.
- vii. Are there other geometric field theories that enjoy integrability properties?
- viii. Extend the integrability of harmonic maps to homogeneous spaces.