

The loop group method for harmonic maps with applications to Willmore surfaces

The first part of the talk gives a review of the loop group method for harmonic maps from Riemann surfaces to (semisimple) symmetric spaces. Applications of this will be illustrated by pointing out the relation between certain types of harmonic maps and certain classes of surfaces. In the second part we will describe in some detail the discussion of Willmore surfaces in spheres along the lines of the first part. This will include the occurrence of some unusual features. Finally, time permitting, we will talk about a harmonic map for Willmore surfaces, found by Frederic Helein, which gives an additional avenue for the loop group approach.

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