1061-57-195 **Mariel Vazquez*** (mariel@math.sfsu.edu), Mathematics Department, 1600 Holloway Ave, San Francisco, CA 94116. *Topological analysis of difference topology experiments: applications to a Mu-DNA complex.*

We develop topological methods for analyzing difference topology experiments involving 3 string tangles. Difference topology is a novel technique used to unveil the structure of stable protein-DNA complexes. We analyze such experiments for the Mu protein-DNA complex. We show that there is a unique biologically relevant solution. That is, we show there is a unique rational tangle solution, which is also the unique solution with small crossing number. These techniques can be applied to any stable protein-DNA complex in order to determine the topology of protein-bound DNA. This is joint work with john Luecke and Isabel Darcy. (Received April 13, 2010)