1164-14-40 **Aida Maraj*** (aida.maraj@mis.mpg.de). *An Algebraic Invitation to Maximum Likelihood Estimation.*

The first part will be a friendly introduction from an algebraist point of view to one of the main problems in data analysis; how to estimate the point (probability distribution) in an algebraic variety (statistical model) that maximizes a likelihood function (is most likely to be the right distribution) for a given sample point (observed data)? The Maximum Likelihood Estimate is found among critical points of the likelihood function. The number of critical points of the likelihood function in the variety is the Maximum Likelihood (ML) degree of a statistical model. Moreover, the ML degree of a statistical model is tightly related to the degree of a variety, as it is the number of intersection points of the associated variety with d special hyperplanes, where d is the dimension of the variety. In the second part, using algebra tools we give a formula for the ML degree of two statistical models in phylogenetics. This is based on joint work with T. Boege, J.I. Coons, C. Eur, and F. Röttger. (Received January 15, 2021)