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**A coherent analysis of elastic electron-proton scattering data**

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The extraction of form factors and radii from scattering data is a treacherous business, and it is easy to bias the result with the choice of an unsuitable fit function. In the first part of the talk, I will present our analysis of the Mainz and world data sets, and the checks we have made to ensure that the results are accurate and unbiased. Recently, several authors have reanalyzed the Mainz and world data sets on electron-proton scattering, with the aim to extract the proton charge radius. The results fall into two groups: radii around 0.88 fm and around 0.84 fm, respectively. We find that the latter group typically is affected by various problems, discussed in the second part of the talk.