

Bajesovski pristup fitovanju - spektroskopski primer -

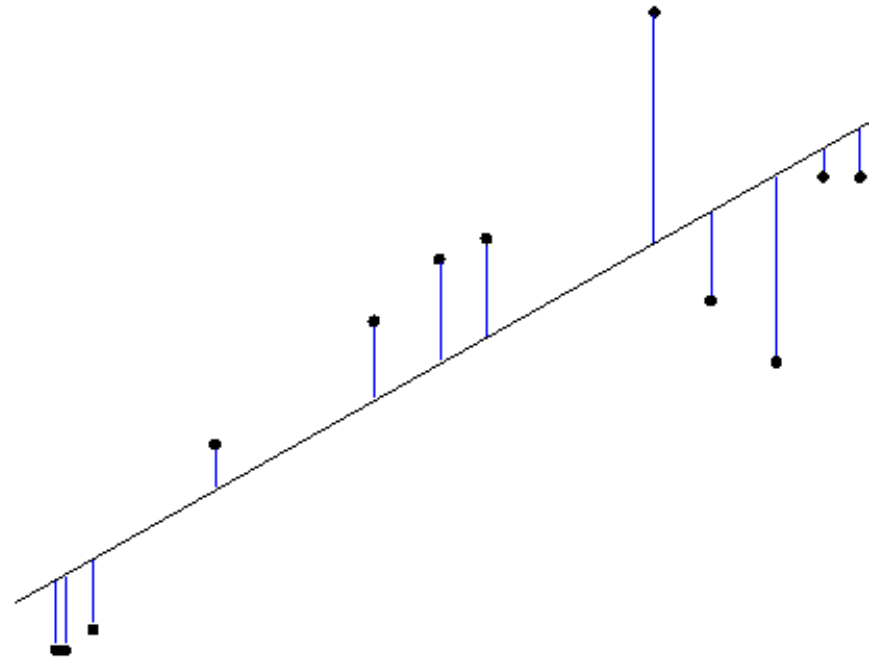
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Prednosti bajesovskog fitovanja

- Opisujemo podatke objektivnom funkcijom.
- Možemo fitovati i greške merenja.
- Ispitujemo samo određen deo prostora parametara – veoma brz algoritam!
- Eliminišemo “outlayer” podatke.

Modelovanje



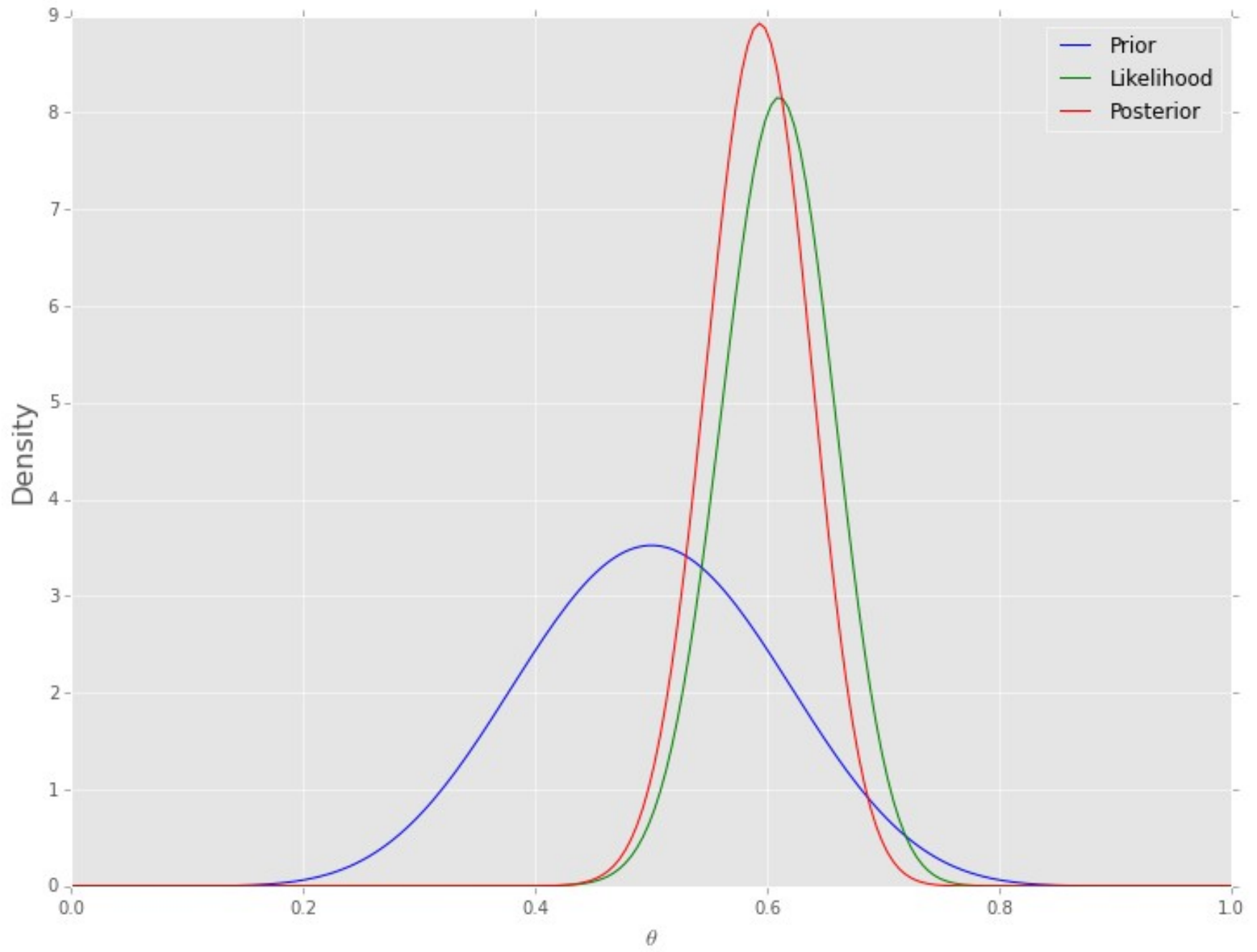
- Bajesova formula:

likelihood: $p(D|\hat{\Theta}) = \mathcal{L} = e^{-\chi^2}$

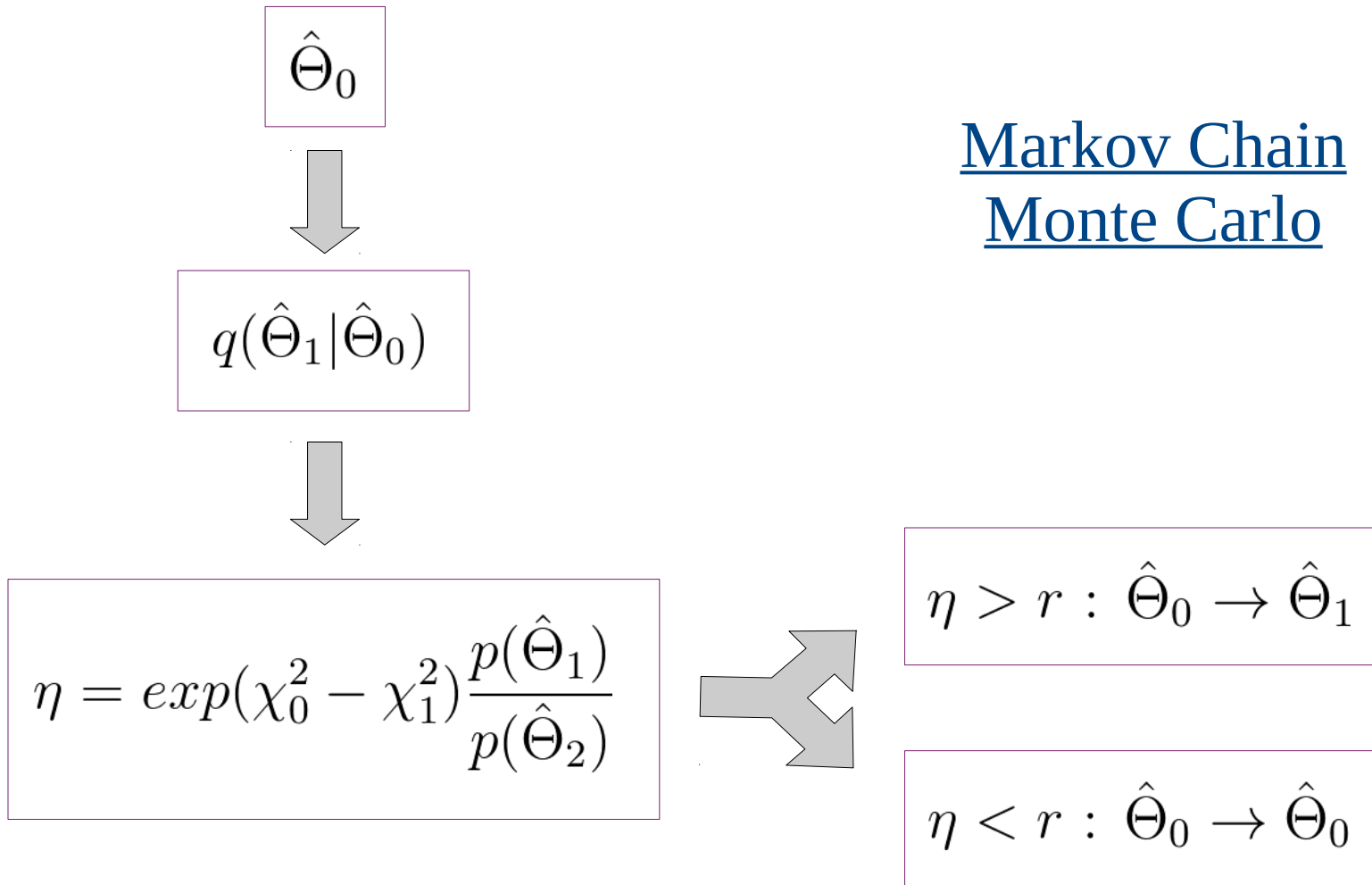
$$p(\hat{\Theta}|D) = \frac{p(D|\hat{\Theta})p(\hat{\Theta})}{p(D)}$$

a posteriorna
verovatnoća

prior



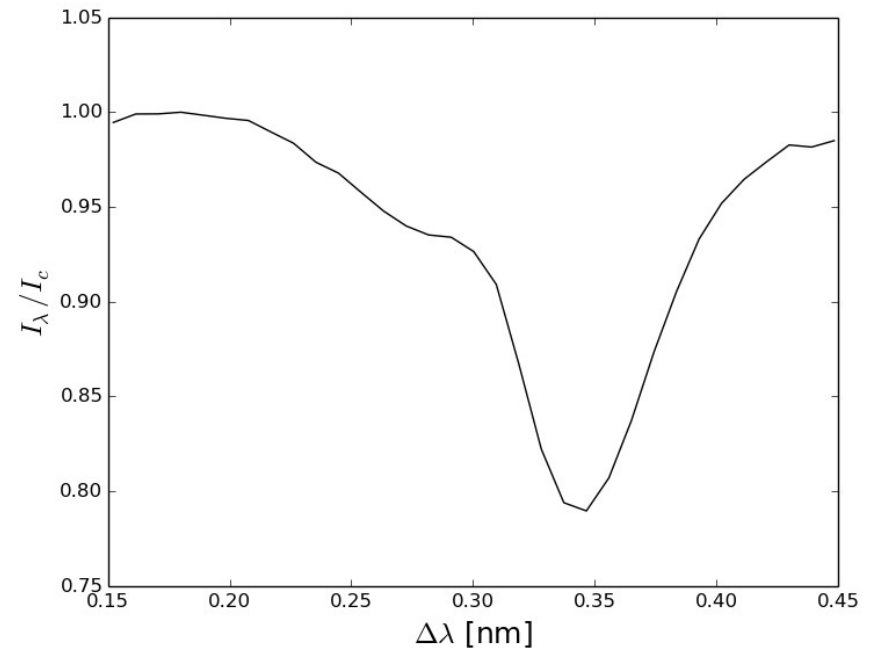
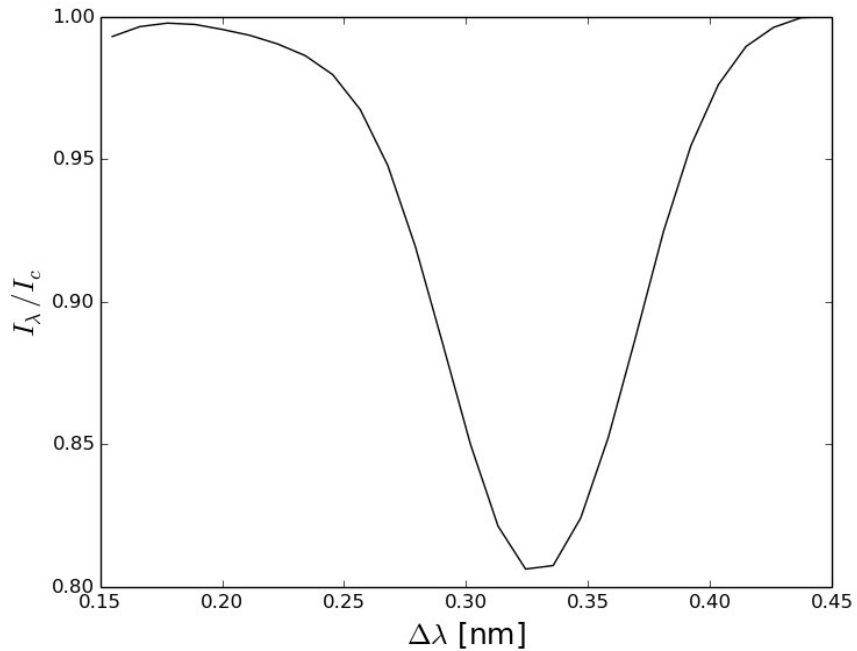
MCMC: Metropolis-Hastings-ov algoritam

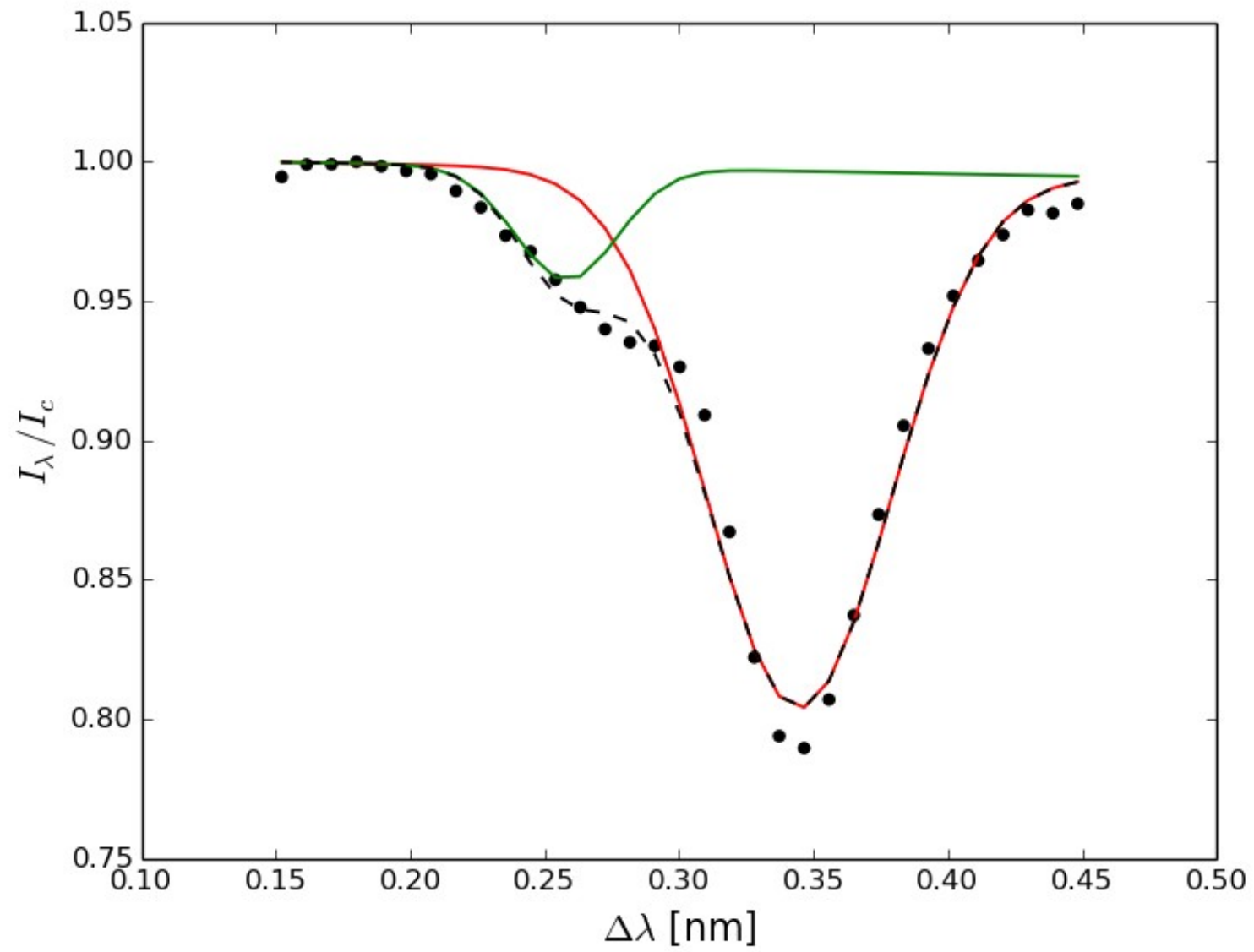


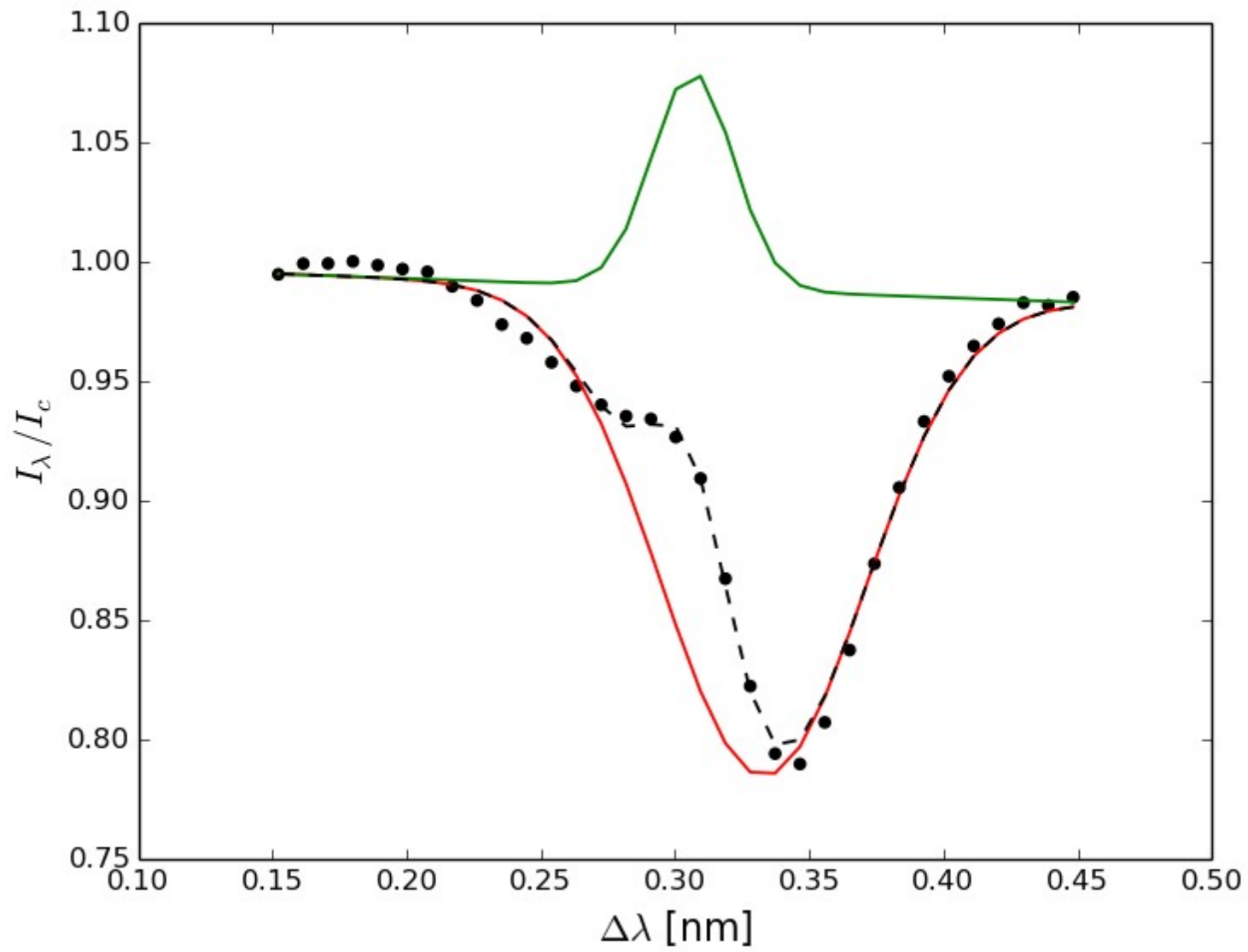
Razdvajanje spektralnih linija

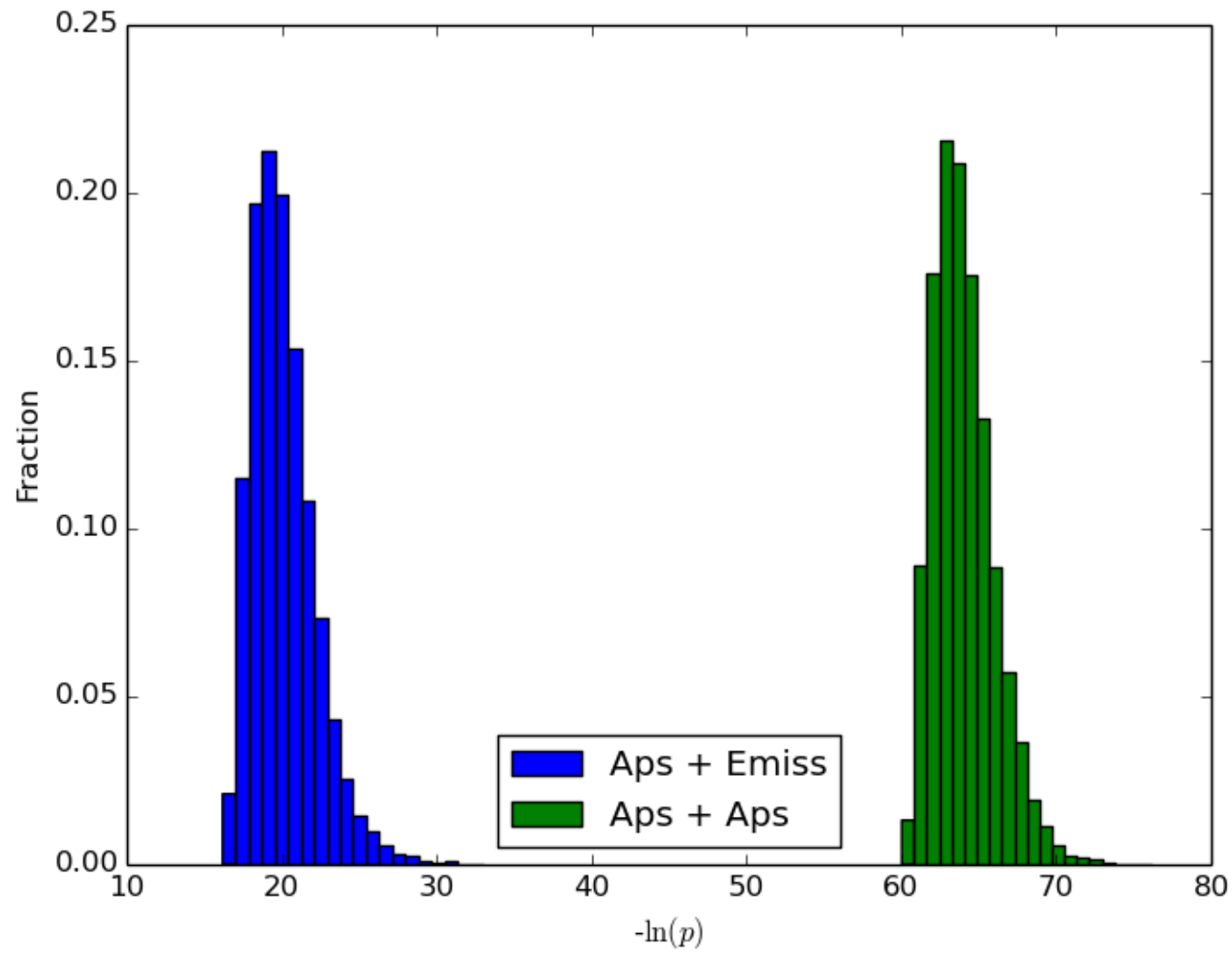
- Linija Sr4607 sa ruba Sunca.

$$f(\hat{\Theta}) = \sum_{i=1}^2 A_i e^{-\frac{(x-\mu_i)^2}{\sigma_i^2}} + kx + n$$









Umesto zaključka

- MCMC je lagan, brz i veoma praktičan – vangalaktička, gravitacioni talasi, spektri, ...
- Python moduli koji rade sa MCMC algoritmima: pymc, [emcee](#) (“Seriously Kick-Ass MCMC”).
- David W. Hogg, 2010. “Data analysis recipes”.
- DFM – [emcee](#) (affine invariante MCMC, Goodman i Weare, 2010.).