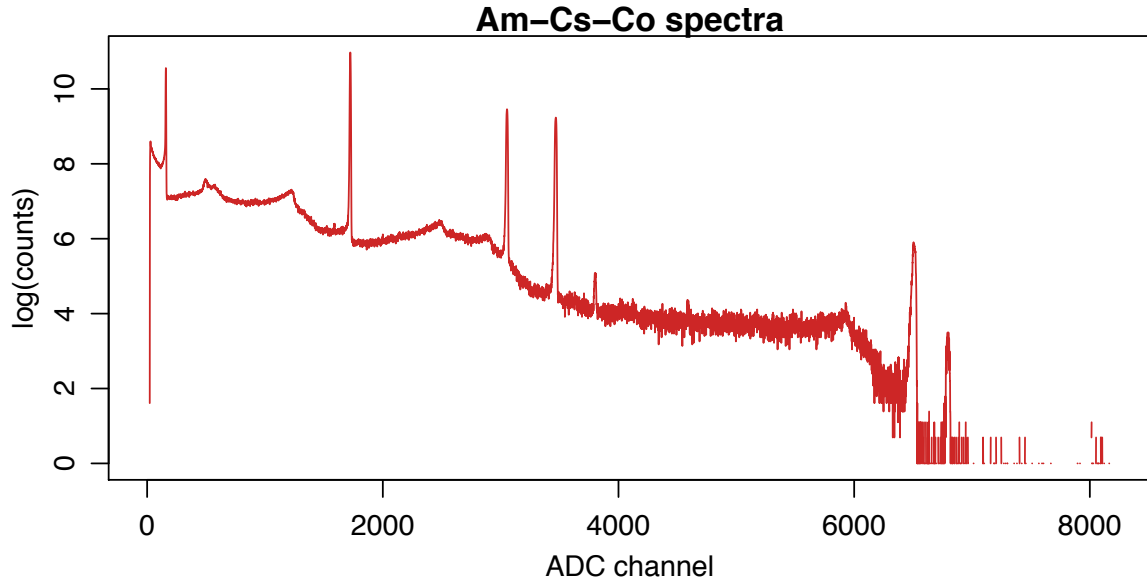# Extraction of signal over background from spectral data, in different data taking conditions, using a Markov Chain Monte Carlo with a gibbs sampler

The plot show in the following figure is an energy spectrum collected with a Germanium detector irradiated by a combination of three sources: ^{241}Am, ^{60}Co and ^{137}Cs.

Am–Cs–Co spectra

According to [1], the source nuclides emit the following photons:

Nuclide	^{241}Am	^{137}Cs	^{60}Co	
Photon energy (keV)	59.54	661.66	1173.24	1332.51

Using a Bayesian method similar to that presented during the course, and with the help of a MCMC, infer the number of events under the source γ peaks, taking into account for the underlaying background.

Bibliography

[1] Laboratoire national Henri Becquerel, tables of eveluated data on radioactive nuclides, `http://www.nucleide.org/DDEP_WG/DDEPdata.htm`