Discrete prior probabilities: the entropy principle

Comments on 11.6

First of all, Lagrange multipliers method can give rigorous proofs. Of course the presentation in 11.6 is not rigorous, but that is a feature of the particular situation and presentation, not a general comment on Lagrange multipliers method.

Secondly, from "modern" perspective we see that the constraints $E_p[f_k] = F_k$ imply that the cross-entropy

$$H(p, u) = E_p[-\log u] =$$
$$E_p[\log Z(\vec{\lambda})] + E_p[\sum \lambda_i f_i] =$$
$$\log Z(\vec{\lambda}) + \vec{\lambda} \cdot \vec{F}$$

is fixed — and equal to $H(u)$.

Then

$$H(p) = H(p, u) - D_{KL}(p, u) =$$

$$H(u) - D_{KL}(p, u) \leq H(u)$$

with equality precisely when $p = u$.

Comment on 10.7 and 10.8

This seems to ignore completely the debate on foundations of quantum mechanics, and such topics as "alternative" formulations of de Broglie–Bohm pilot wave and Everett many world interpretation, as well as the Bell's theorem. Jaynes's views on a lot of this are in his paper "Clearing up the mysteries – the original goal".