On the power of IP in statistical modelling

- defensive point-of-view
  - IP protects against the potentially disastrous consequences of applying standard procedures under violated assumptions
    → robustness in frequentist and Bayesian settings

- offensive point of view.
  IP is a powerful methodology, allowing for
  - separation of variability (variance) from indeterminism
  - active modelling of ignorance
  - active modelling of conflicting/surprising information
  - active use of weak knowledge that can not be used in the traditional setting

robust Bayesians

Bayesians

non-Bayesians

frequentist robust statistics

Walley & Fine (1982)

epistemic

model imprecision

ontic (ontological)

prior-data conflict

neighborhood sampling model

imprecision for in **statistical modelling**

Generalized linear models under ontic data imprecision

data imprecision

Generalized linear models under epistemic data imprecision

ontic

epistemic

random onjunctive sets

Couso & Dubois (2014)
Couso, Dubois & Sanchez (2014)

Ill-known random var.