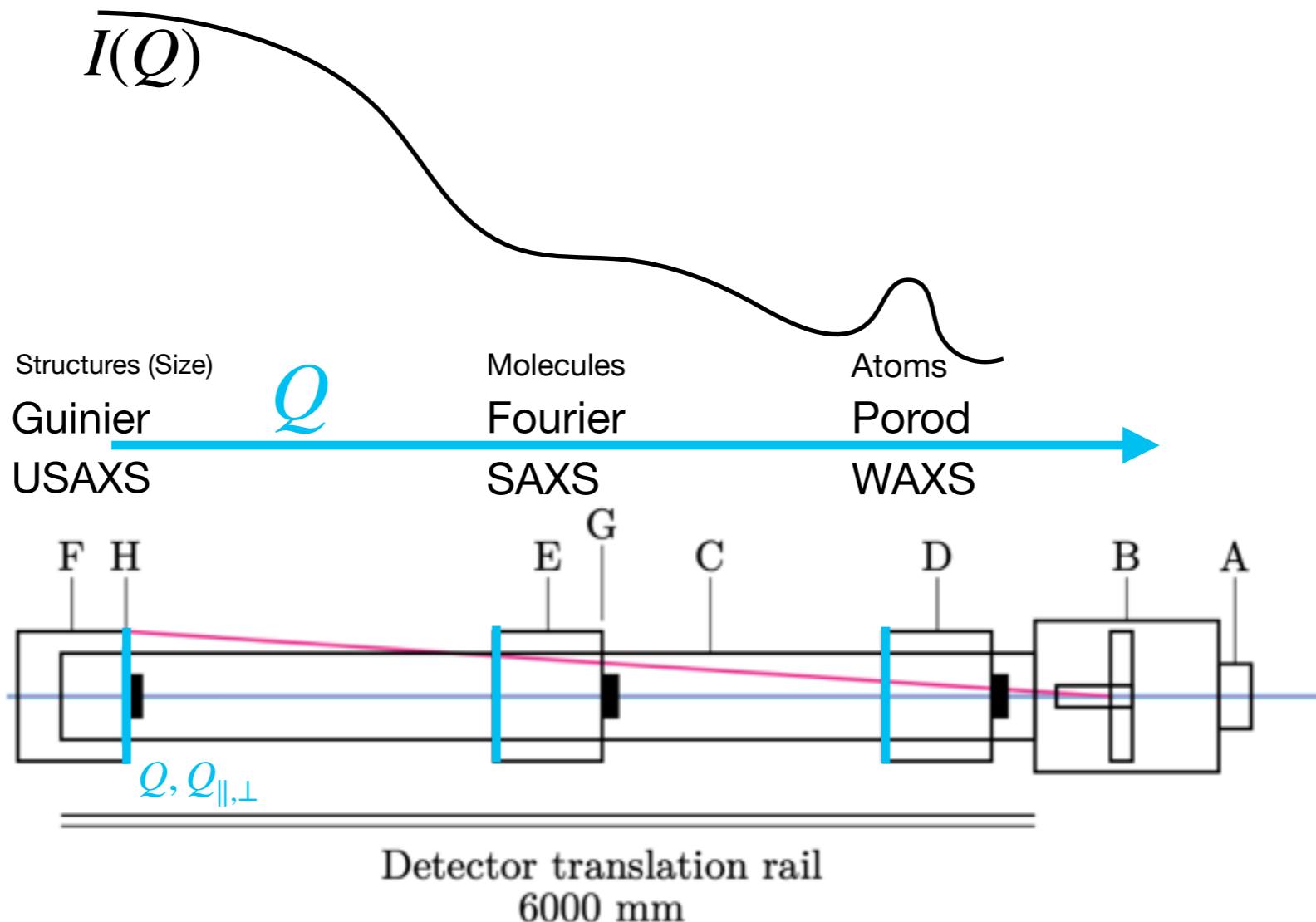


# SAXS – Measures Information

## Introduction

A – Collimators, B – Sample chamber (two sample positions (GISAXS, SAXS), C – 6 m vacuum flight tube, D – WAXS detector (with beamstop), E – SAXS detector (with beamstop), F – USAXS detector (with beamstop), G – PSL (primary scattering line), H – Q-vector (scattering direction marker)



# Constraints & Information Space

**SAXS measures an averaged transform of real-space distances:**

$I(q)$  is purely *experimental space*, Information is determined by the finite q-range, noise, beamstop, resolution (*Information space*). The spatial averaging makes  $p(r)$  a stable distance descriptor.

**Experimental space:** the measured  $I(q)$ .

**Information space:** what survives sampling, noise, and normalisation, background subtraction.

**Model space:** structural hypotheses consistent with the available information,  $p(r)$ .

Proper normalisation respects Shannon sampling, positivity of  $p(r)$  (where appropriate), and avoids hidden priors.

The goal is to make the **information content** of  $I(q)$  explicit *before* any structural interpretation.