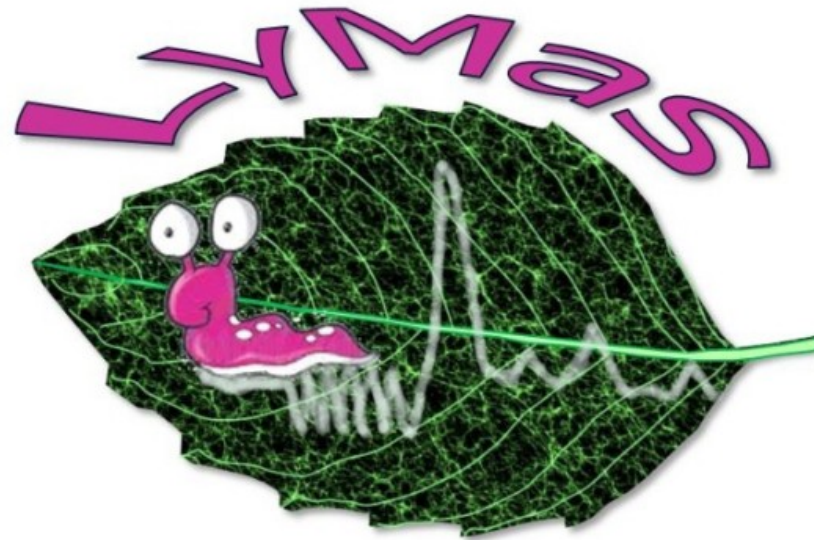# Retour Atelier "Outil" Action Dark Energy

Octobre 2020

Guilhem Lavaux, Stéphane Plaszczynski, Yann Rasera

Présentation outil

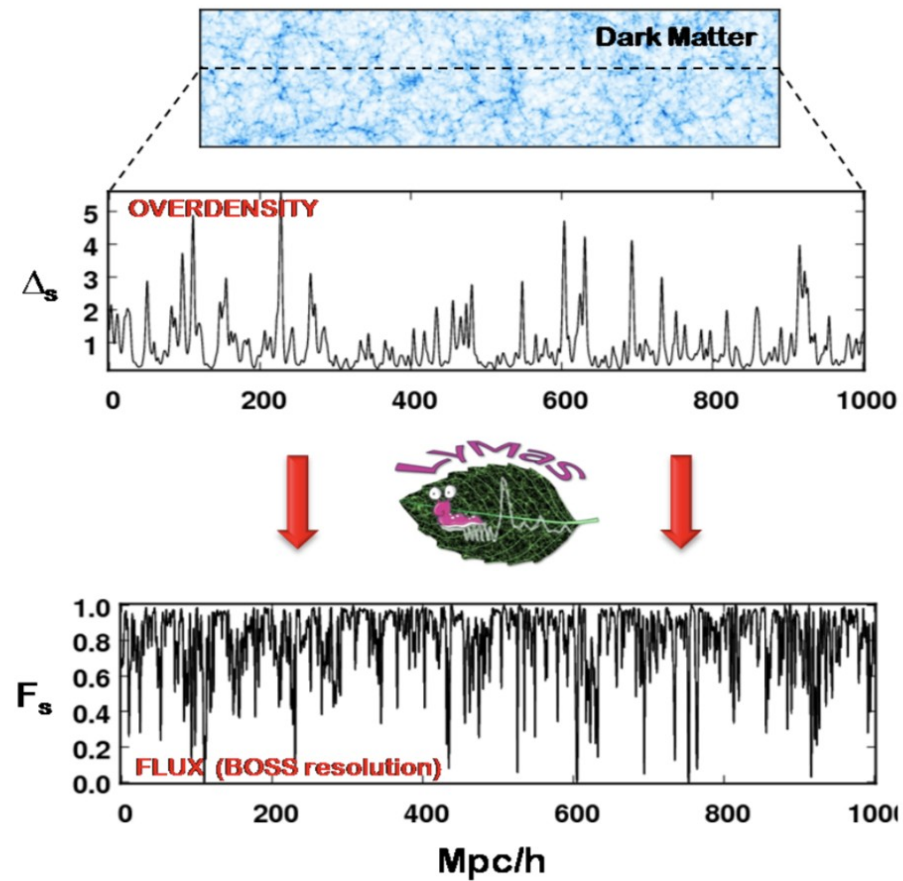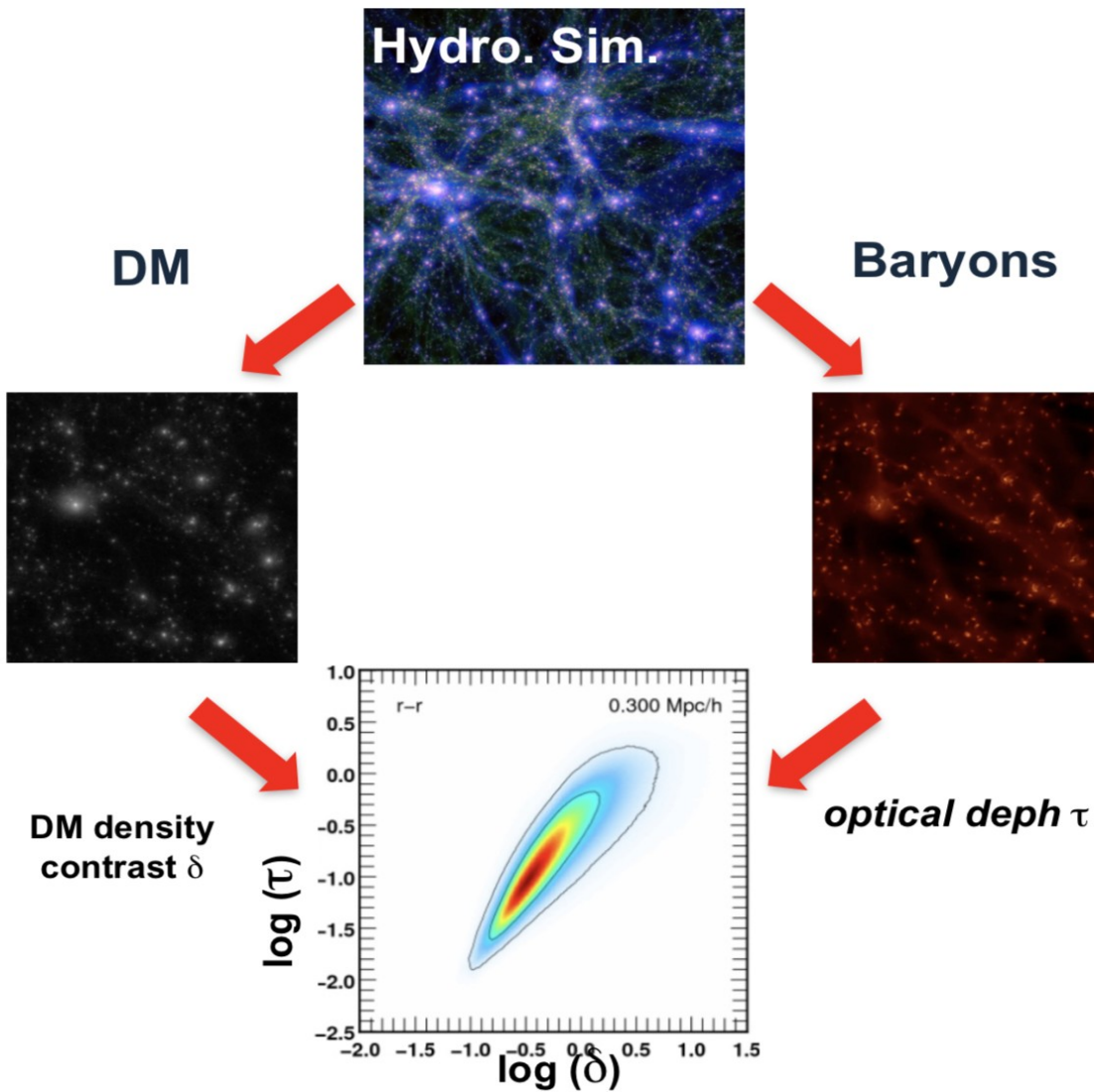**Predicting Large-Scale Lyman-α Forest Statistics with**

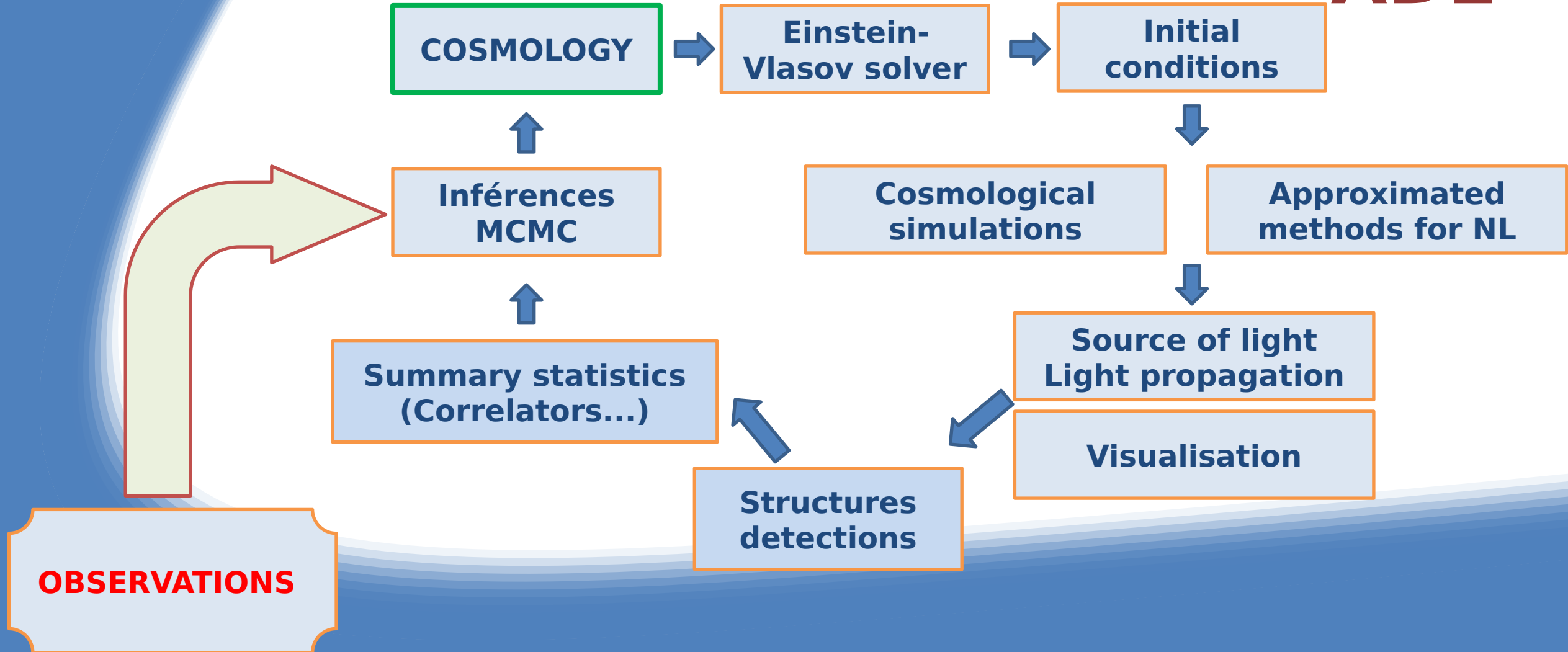**Lyman-α Mass Association Scheme** (2014, ApJ, 784, 11)

Sébastien Peirani (OCA - Lagrange)

D. Weinberg, S. Colombi, J. Blaizot, Y. Dubois, J. Devriendt, C. Pichon

LyMAS: Lyα Mass Association Scheme

Panorama des codes abordés dans "outil" depuis le début de ADE

Presentations

- **Pert. lin.** CLASS (*JLesgourgues*)
- **Simus rapides** (*PBaratta*)
- **Grosses sims**
  - MUSIC IC (*OHahn*), Ramses (*RTeyssier*), Magrathea raytracing (*YR*), LyMas assignment (*SPeirani*)
- **Détections, correlations, analyses etc.**
  - sourceExtractor++ (*EBertin*)
  - AngPow, LagSHT, CNN robustness (*JECampagne*)
  - Spark (*SP*)
- **Inferences**
  - JAM (*SIlic*), CosmoSiS (*AFerte*)
  - BORG (*GL*)

Wiki

- Several codes inside: but not enough!!!

- **Fill-in the wiki with your favorite code takes <1min .... for the eternity ;-)**

- In case of pb contact us

Brainstorming

- Methods
  - consider Machine Learning techniques
    - building summaries (IMNN)
    - build fast simulations (see e.g. CAMELS)

  - scale 2PCF:
    - improving the scaling of 2PCF estimator
    - application to large high-res sims (with different DE flavors).

  - code chains:
    - automated script from cosmology to post-processing (already exist in some groups but not modular)
    - way to normalize the IO for our codes ?
    - gitlab dark energy?

Brainstorming

- Physics projects
  - WL&RSD: 3x2pt, Dark Energy & Galaxy assignment schemes (*What is the role of various assignment schemes on the determination the equation of state of DE?*)

  - "CAMELS++": explore hydro parameters & Dark Energy with updated physics (how to break the degeneracy between hydro & dakr energy?)

  - Strong lensing of galaxy clusters: cluster sims with hydro & DE (why recent results suggest more SL events in observation than in simulations?)