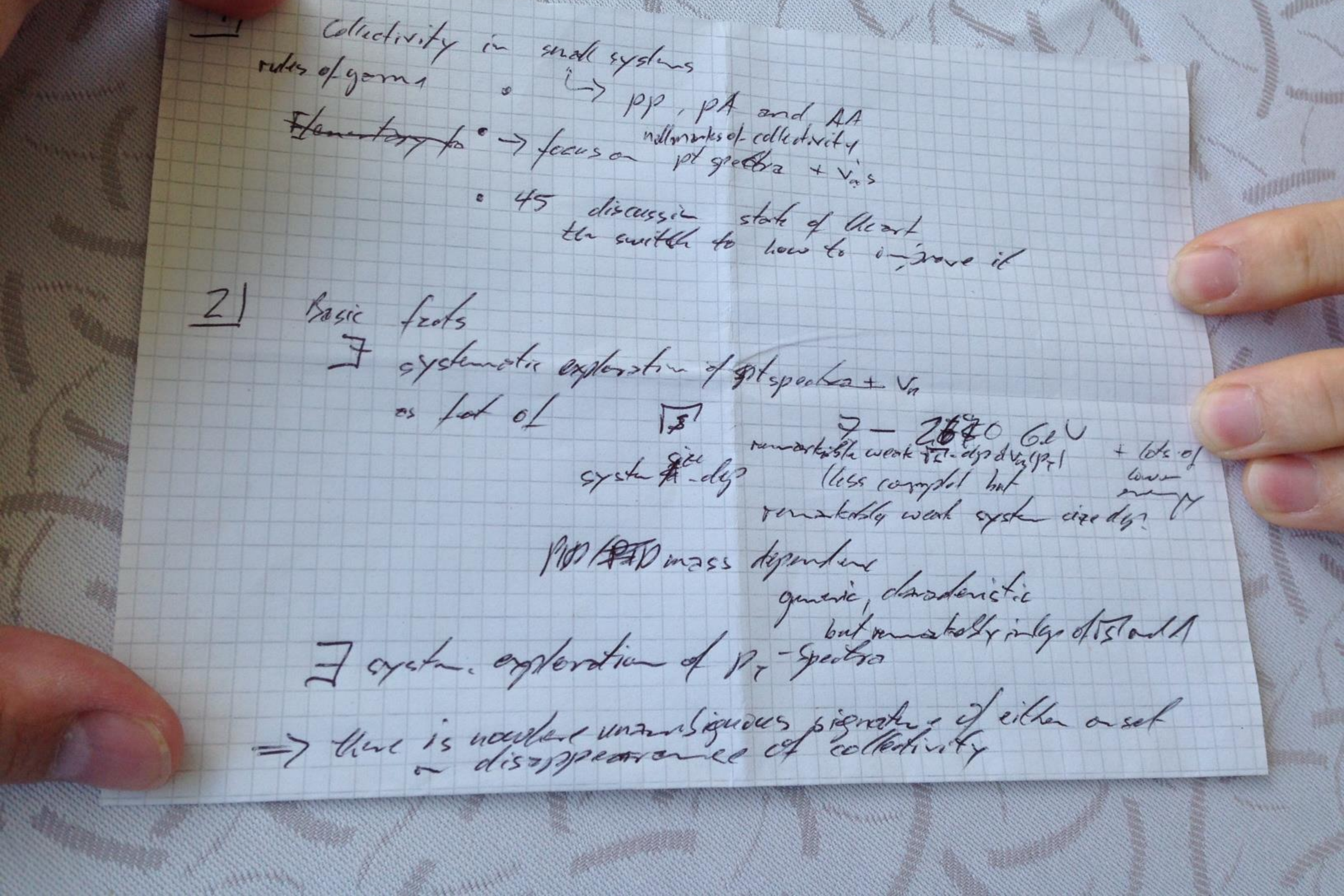
The Grand Plan



1) collectivity in small systems
rules of game
- ↳ pp, pA and AA
- ~~Elementary~~ → focus on pt spectra + v_n's (hallmarks of collectivity)
- 45 discussion state of the art
  then switch to how to improve it

2) Basic facts
∃ systematic exploration of pt spectra + v_n
as fct of $\sqrt{s}$ — 2.76 GeV + lots of lower energy
remarkably weak $\sqrt{s}$-dep of $v_n(p_T)$
system size-dep — less complete but remarkably weak system size dep.

~~PID~~ mass dependence
generic, characteristic
but remarkably indep of $\sqrt{s}$ and A

∃ system. exploration of p_T-spectra

⇒ there is nowhere unambiguous signature of either onset or disappearance of collectivity

Collectivity in small systems

Rules for discussion:

- What do we discuss?
  - "small systems" = pp, pA, AA (yes, also small)
  - "collectivity": hallmarks are v_n's and p_T spectra
- How do we plan to organize the discussion:
  - *1st part (~45 min):* assessment of state of the art

    Can we start drafting a chapter "collectivity" for the ultimate textbook of QCD already now?
  - 2nd part (~45 min): what are opportunities for further progress in TH and Exp?

Why we are discussing?

- Spectra and v_n show robust and generic signatures of collectivity
  - across system size: pp, pPb, dAu, CuCu,…, PbPb
  - across sqrt(s)
  - Inclusive and differential PID/mass dependence
- But there is no unambiguous signature of either onset or dissappearance of collectivity.
- Can we trust then our interpretation of collectivity?
- Can we arrive at a quantified and experimentally testable, dynamical understanding of how collectivity arises?

What we try to understand?

- Initial conditions
  - To what extent are they calculable
  - To what extent are they experimentally accessible without (or: with weak) dynamical assumptions?
  - Does the TH state of the art of documenting the dependence on initial conditions need some improvements?
- Hydrodynamization / Isotropization / Thermalization
  - What did we learn so far from studies based on gauge/gravity duality, CGC-Glasma physics or other pictures? And which of these insights are experimentally accessible?
- Dynamics
  - What is the microscopic dynamics leading to thermalization and to hydrodynamic behaviour?
  - Can we progress in the program of constraining transport coefficients? Is our understanding “PDG-grade”?
- Freeze-out/ hadronic rescattering
  - As a source of fluctuations?
  - As a source of uncertainty in the dynamical modeling?
  - Experimental handles?