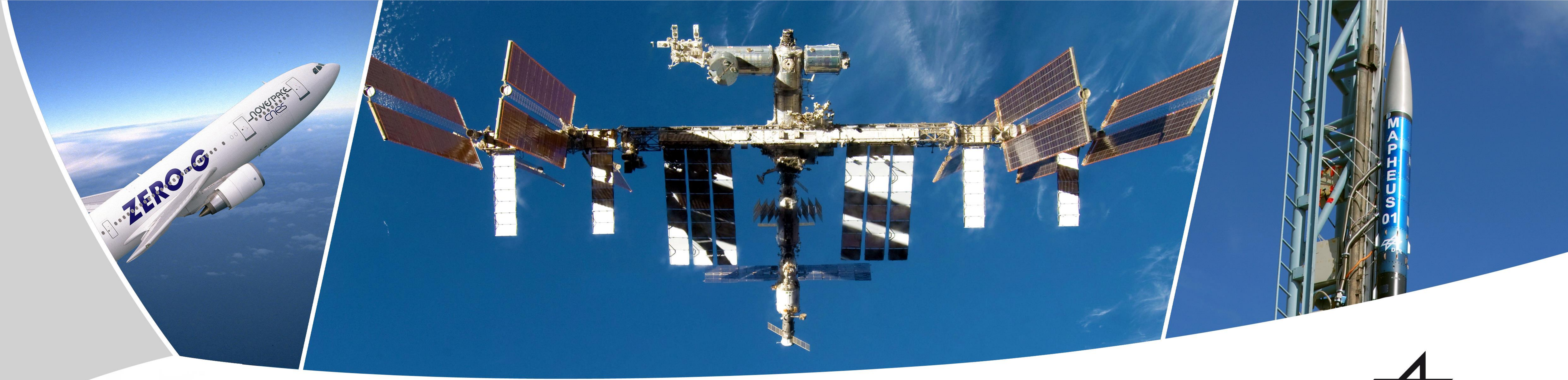

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On the systematics of rheological measurements of gas fluidized grains

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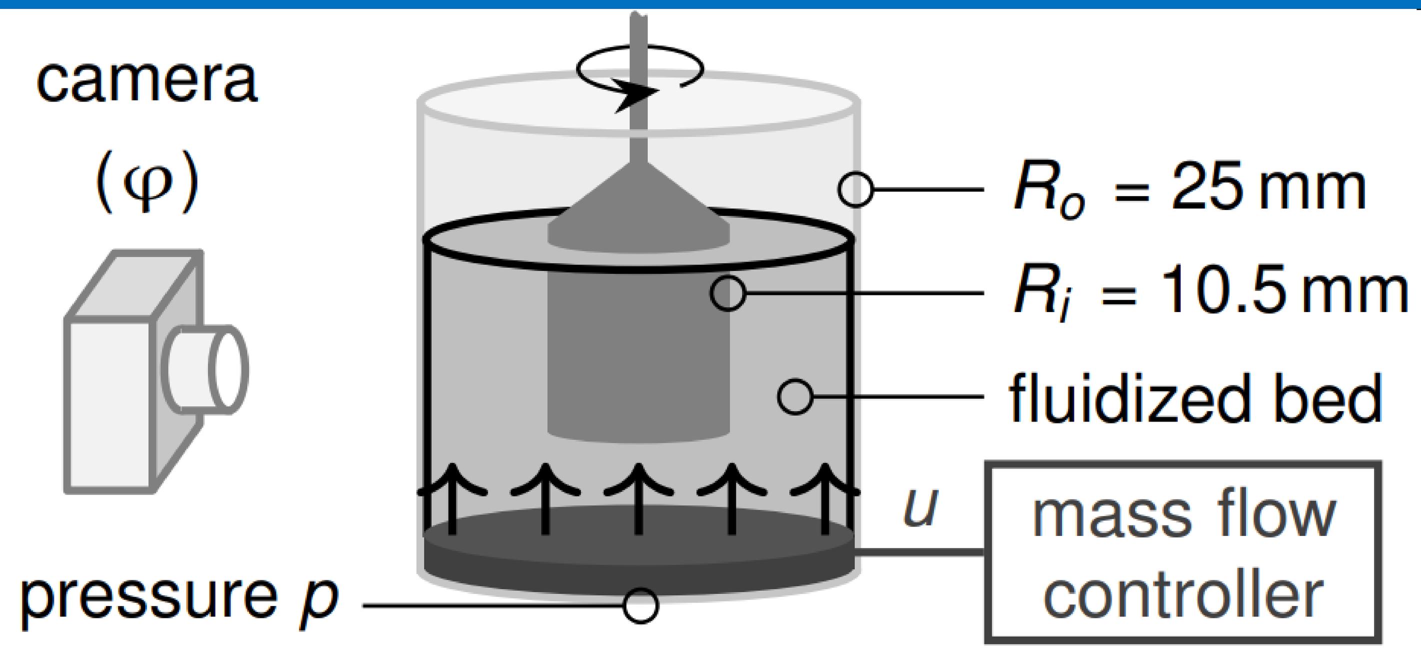
Motivation

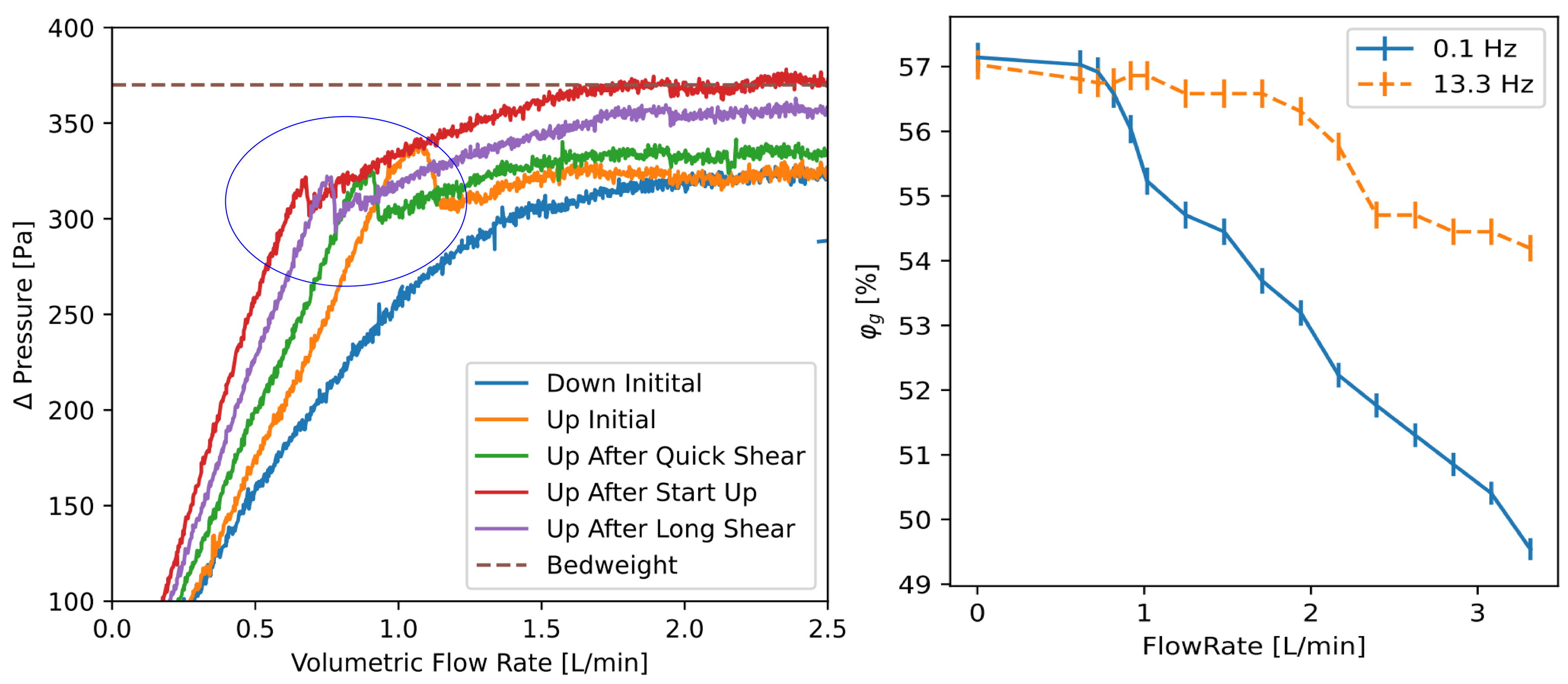
- Steady-state rheology on gas-fluidized systems
- A repeatable protocol usable for all samples
- Influence of charges on the cohesion
  - Aging

Set-Up

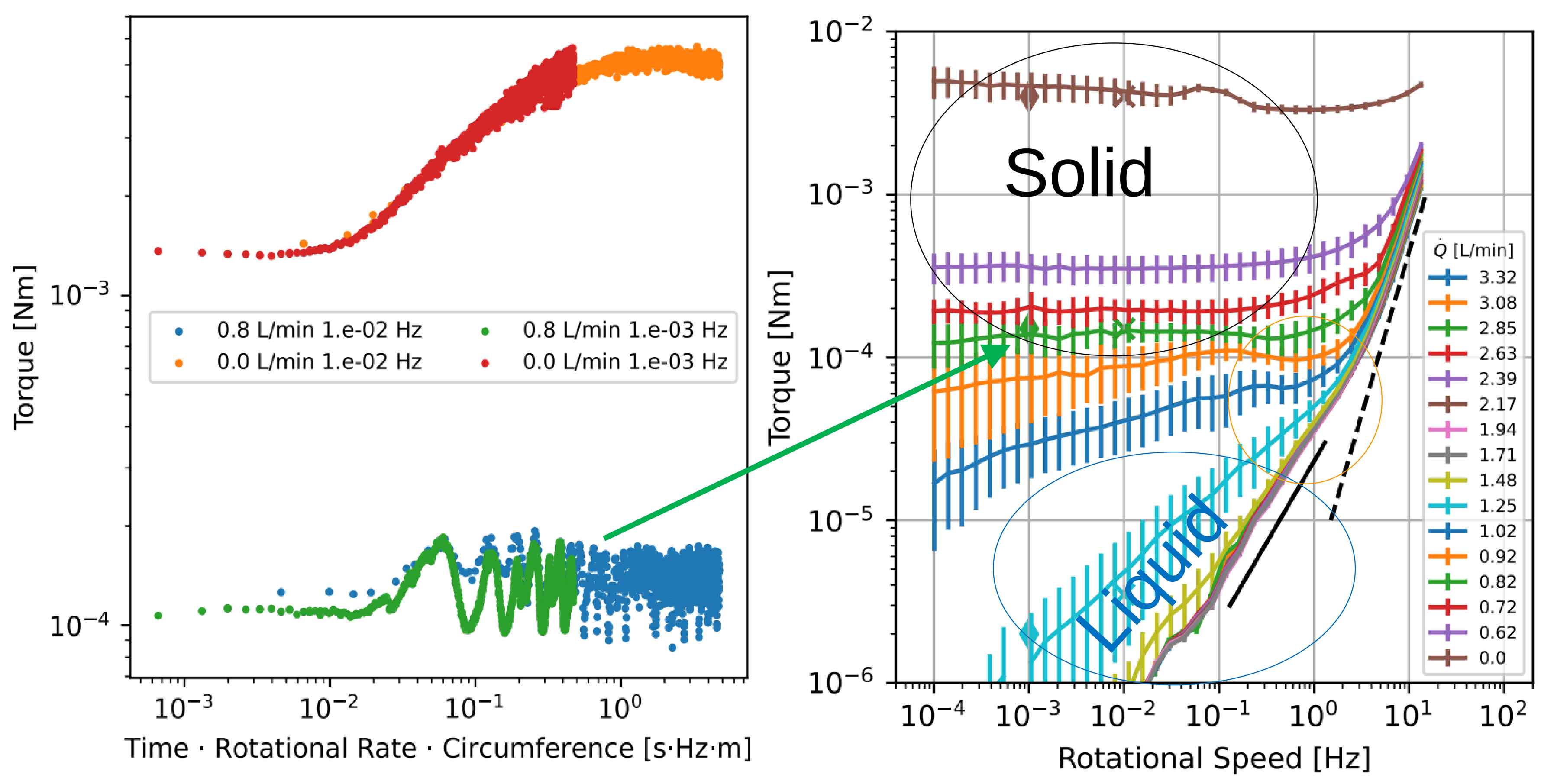


- Camera for average density measurements
- Dry air from the bottom controls the effective temperature of the system.
- Weight of sample measured to characterize the cohesion behavior
- Couette Geometry for rheological behavior
- Density dependent measurements possible
- Protocol:
  - 1st Pressure drop
  - 2nd Excitation and quick shear
  - 3rd Excitation steady-state shear
  - 4th At least five repetitions of flow curves at 16 different excitations
  - Pressure Drop measurement between each step

Analysis of the data



- Average density per energy input and shear rate
- Cohesion peaks in pressure drop curves
- Density dependent shear behavior
- Time evolution of cohesion observable



Outlook

- Quantization of charges
  - Maximum equilibrium charge; Bond Number
- Comparison between sizes
- Further study of the flow behavior by supportive oscillatory measurements

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