

# ON COMPARABILITY OF NONLOCAL ENERGY FORMS

MORITZ KASSMANN

One aim of the talk is to investigate conditions under which a given quadratic form is comparable with the quadratic form that defines the seminorm of a fractional Sobolev space. We provide several examples including those with singular measures and one example related to the study of the Boltzmann equation. We outline the proof of comparability in the latter case, which involves delicate chaining and renormalization arguments. A second aim of the talk is to explain the significance of the aforementioned comparability results with regard to Dirichlet forms and regularity of solutions to integrodifferential equations. The talk is based on joint works with Bartek Dyda resp. with Kai-Uwe Bux and Tim Schulze.

## REFERENCES

- [1] Kai-Uwe Bux, Moritz Kassmann, Tim Schulze. Quadratic forms and Sobolev spaces of fractional order, *work in progress*
- [2] Bartek Dyda, Moritz Kassmann. Regularity estimates for elliptic nonlocal operators, arXiv:1509.08320