# Bibliography for the lecture of I. Bouchoule at CAPS School, Barcelona, November 2022

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November 15, 2022

## 1 Introduction

You will find here a bibliography corresponding to the first (big) part of my lecture done at CAPS School. The rest is coming soon !

## 2 Interactions in 1D

### References

[1] T. Bergeman, M. G. Moore, and M. Olshanii. Atom-Atom Scattering under Cylindrical Harmonic Confinement: Numerical and Analytic Studies of the Confinement Induced Resonance. *Phys. Rev. Lett.*, 91(16):163201, October 2003.

[2] Henning Moritz, Thilo Stöferle, Kenneth Günter, Michael Köhl, and Tilman Esslinger. Confinement Induced Molecules in a 1D Fermi Gas. *Phys. Rev. Lett.*, 94(21):210401, June 2005.

[3] Elmar Haller, Manfred J. Mark, Russell Hart, Johann G. Danzl, Lukas Reichsöllner, Vladimir Melezhik, Peter Schmelcher, and Hanns-Christoph Nägerl. Confinement-Induced Resonances in Low-Dimensional Quantum Systems. *Phys. Rev. Lett.*, 104(15):153203, April 2010.

[4] M. Olshanii. Atomic Scattering in the Presence of an External Confinement and a Gas of Impenetrable Bosons. *Phys. Rev. Lett.*, 81(5):938–941, August 1998.

## 3 Lieb-Liniger model: Bethe-Ansatz and rapidties

This part contains a HUGE bibliography. I put only reference to the historical paper, and to the recent review we wrote with J. Dubail, which itself contains a large bibliography.

### References

[1] Elliott H. Lieb. Exact Analysis of an Interacting Bose Gas. II. The Excitation Spectrum. *Phys. Rev.*, 130(4):1616–1624, May 1963.

[2] A. S. Campbell, D. M. Gangardt, and K. V. Kheruntsyan. Sudden Expansion of a One-Dimensional Bose Gas from Power-Law Traps. *Phys. Rev. Lett.*, 114(12).

[3] Elliott H. Lieb and Werner Liniger. Exact Analysis of an Interacting Bose Gas. I. The General Solution and the Ground State. *Phys. Rev.*, 130(4):1605–1616, May 1963.

[4] Joshua M. Wilson, Neel Malvania, Yuan Le, Yicheng Zhang, Marcos Rigol, and David S. Weiss. Observation of dynamical fermionization. *Science*, 367(6485):1461–1464, March 2020. Publisher: American Association for the Advancement of Science Section: Report.

[5] Isabelle Bouchoule and Jérôme Dubail. Generalized hydrodynamics in the one-dimensional Bose gas: theory and experiments. *J. Stat. Mech.*, 2022(1):014003, January 2022.

# 4 Ground state and relaxed states

Again, the litterature on the notion of relaxation in integrable systems, and in Lieb-Liniger in particular is huge. I refer to our review article for an extensive bibliography. I propose the following papers. Note the paper of Wang et al., which is not on Lieb-Liniger, but which propose a test of the GETH.

# References

[1] C. N. Yang and C. P. Yang. Thermodynamics of a One-Dimensional System of Bosons with Repulsive Delta-Function Interaction. *Journal of Mathematical Physics*, 10(7):1115, July 1969.

[2] Andreas Vogler, Ralf Labouvie, Felix Stubenrauch, Giovanni Barontini, Vera Guarrera, and Herwig Ott. Thermodynamics of strongly correlated one-dimensional Bose gases. *Phys. Rev. A*, 88(3):031603, September 2013.

[3] J. Armijo, T. Jacqmin, K. V. Kheruntsyan, and I. Bouchoule. Probing Three-Body Correlations in a Quantum Gas Using the Measurement of the Third Moment of Density Fluctuations. *Phys. Rev. Lett.*, 105(23):230402, November 2010.

[4] Thibaut Jacqmin, Julien Armijo, Tarik Berrada, Karen V. Kheruntsyan, and Isabelle Bouchoule. Sub-Poissonian Fluctuations in a 1D Bose Gas: From the Quantum Quasicondensate to the Strongly Interacting Regime. *Phys. Rev. Lett.*, 106(23):230405, June 2011.

[5] A. H. van Amerongen, J. J. P. van Es, P. Wicke, K. V. Kheruntsyan, and N. J. van Druten. Yang-Yang Thermodynamics on an Atom Chip. *Phys. Rev. Lett.*, 100(9):090402, March 2008.

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[8] A. Johnson, S. S. Szigeti, M. Schemmer, and I. Bouchoule. Long-lived nonthermal states realized by atom losses in one-dimensional quasicondensates. *Phys. Rev. A*, 96(1):013623, July 2017.

[9] Anatoli Polkovnikov, Krishnendu Sengupta, Alessandro Silva, and Mukund Vengalattore. Colloquium: Nonequilibrium dynamics of closed interacting quantum systems. *Rev. Mod. Phys.*, 83(3):863–883, August 2011.

[10] T. Palmai and R. M. Konik. Quasilocal charges and the generalized Gibbs ensemble in the Lieb-Liniger model. *Phys. Rev. E*, 98(5):052126, November 2018.

[11] Amy C. Cassidy, Charles W. Clark, and Marcos Rigol. Generalized Thermalization in an Integrable Lattice System. *Phys. Rev. Lett.*, 106(14):140405, April 2011.

[12] Qin-Qin Wang, Si-Jing Tao, Wei-Wei Pan, Zhe Chen, Geng Chen, Kai Sun, Jin-Shi Xu, Xiao-Ye Xu, Yong-Jian Han, Chuan-Feng Li, and Guang-Can Guo. Experimental verification of generalized eigenstate thermalization hypothesis in an integrable system. *Light Sci Appl*, 11(1):194, June 2022. Number: 1 Publisher: Nature Publishing Group.

[13] Lev Vidmar and Marcos Rigol. Generalized Gibbs ensemble in integrable lattice models. *J. Stat. Mech.*, 2016(6):064007, June 2016. Publisher: IOP Publishing and SISSA.

# 5    Long-wavelength dynamics: Generalized Hydrodynamics

Here I refer to the recent review we wrote with Jérôme Dubail, which contains many references, and describe much more development than I present here. I put below the original papers and the two experimental papers I describe.

# References

[1] Alvise Bastianello, Vincenzo Alba, and Jean-Sébastien Caux. Generalized Hydrodynamics with Space-Time Inhomogeneous Interactions. *Phys. Rev. Lett.*, 123(13):130602, September 2019.

[2] Jacopo De Nardis, Denis Bernard, and Benjamin Doyon. Diffusion in generalized hydrodynamics and quasiparticle scattering. *SciPost Physics*, 6(4):049, April 2019.

[3] M. Schemmer, I. Bouchoule, B. Doyon, and J. Dubail. Generalized Hydrodynamics on an Atom Chip. *Phys. Rev. Lett.*, 122(9):090601, March 2019.

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[5] Isabelle Bouchoule and Jérôme Dubail. Generalized hydrodynamics in the one-dimensional Bose gas: theory and experiments. *J. Stat. Mech.*, 2022(1):014003, January 2022.

[6] Neel Malvania, Yicheng Zhang, Yuan Le, Jerome Dubail, Marcos Rigol, and David S. Weiss. Generalized hydrodynamics in strongly interacting 1D Bose gases. *Science*, 373(6559):1129–1133, September 2021.