

Some References to H. W. Grießhammer: Effective Field Theories in Few-Nucleon Systems

This is an incomplete, biased list of references I found useful when preparing the lectures, mostly of lecture notes and review articles. Please consult them as exhaustive bibliographic and historic resources for the original publications. I do usually not mention original articles. Ordering by date of publication only. No guarantees as to completeness, usefulness or relevance. Your mileage may vary.

Introductions to EFT and Its Applications to Nuclear Physics

- [1] D. B. Kaplan, *Five lectures on effective field theory*, arXiv:nucl-th/0510023. Very pedagogic, updated version of [10] which has more emphasis on Chiral Perturbation Theory, EFT(π) and χ EFT, including exercises – a template for my presentation.
- [2] D. R. Phillips, *Building light nuclei from neutrons, protons, and pions*, Czech. J. Phys. **52**, B49 (2002) [arXiv:nucl-th/0203040]. A very nice and pedagogic review which grew out of the 2001 Praha Summer School, with very instructive exercises which focus on EFT(π) – a template for my presentation.
- [3] P. F. Bedaque and U. van Kolck, *Effective field theory for few-nucleon systems*, Ann. Rev. Nucl. Part. Sci. **52**, 339 (2002) [arXiv:nucl-th/0203055]. Focus on Nuclear EFT(π) and χ EFT – a template for my presentation.
- [4] U. van Kolck, L. J. Abu-Raddad and D. M. Cardamone, *Introduction to effective field theories in QCD*, arXiv:nucl-th/0205058. Written in close collaboration between students and lecturer; focuses on χ EFT and does not use many formulae.
- [5] B. R. Holstein, *Effective interactions are effective interactions*, arXiv:hep-ph/0010033. Pedagogic introduction to EFTs from its beginnings to χ EFT.
- [6] S. R. Beane, P. F. Bedaque, W. C. Haxton, D. R. Phillips and M. J. Savage, *From hadrons to nuclei: Crossing the border*, arXiv:nucl-th/0008064. Exhaustive review of the status of the field in 2000.
- [7] U. van Kolck, *Effective field theory of nuclear forces*, Prog. Part. Nucl. Phys. **43**, 337 (1999) [arXiv:nucl-th/9902015].
- [8] G. P. Lepage, *How to renormalize the Schroedinger equation*, arXiv:nucl-th/9706029. Very influential and pedagogic account of the key ideas of Renormalisation and EFTs, building on the uses of the Schrödinger equation in QED, QCD and χ EFT.
- [9] A. V. Manohar, *Effective field theories*, arXiv:hep-ph/9606222. Pedagogic account for high-energy physicists, focusing on EFTs in QCD.
- [10] D. B. Kaplan, *Effective field theories*, arXiv:nucl-th/9506035. Renormalisation-group aspects of EFTs, including exercises.
- [11] H. Georgi, *Effective field theory*, Ann. Rev. Nucl. Part. Sci. **43**, 209 (1993). A top-cited classic which puts concepts before formulae.
- [12] G. P. Lepage, *What is Renormalization?*, arXiv:hep-ph/0506330. Originally published in 1989, this talk on the EFT philosophy proved so influential that the author set it on the arXiv in 2005.
- [13] A. Manohar and H. Georgi, *Chiral Quarks And The Nonrelativistic Quark Model*, Nucl. Phys. B **234**, 189 (1984). First mention of “Naïve Dimensional Analysis”.

- [14] S. Weinberg, *Phenomenological Lagrangians*, Physica A **96**, 327 (1979). The paper which started it all. . .

Some Trends in Nuclear Physics: Renormalisation Group Perspectives of EFT(π)

- [15] H. W. Hammer, D. R. Phillips and L. Platter, *Pion-mass dependence of three-nucleon observables*, Eur. Phys. J. A **32**, 335 (2007) [arXiv:0704.3726 [nucl-th]]. Strikingly simple account why it's very useful.
- [16] H. W. Griesshammer, *Naive Dimensional Analysis for Three-Body Forces Without Pions*, Nucl. Phys. A **760**, 110 (2005) [arXiv:nucl-th/0502039]. Not so interesting by itself, but exhaustively cites the relevant literature.

Some Trends in Nuclear Physics: Renormalisation Group Perspectives of χ EFT

- [17] M. C. Birse, *Deconstructing triplet nucleon-nucleon scattering*, arXiv:0706.0984 [nucl-th].
- [18] M. C. Birse, *Power counting with one-pion exchange*, Phys. Rev. C **74**, 014003 (2006) [arXiv:nucl-th/0507077].
- [19] A. Nogga, R. G. E. Timmermans and U. van Kolck, *Renormalization of One-Pion Exchange and Power Counting*, Phys. Rev. C **72**, 054006 (2005) [arXiv:nucl-th/0506005].
- [20] S. R. Beane, P. F. Bedaque, M. J. Savage and U. van Kolck, *Towards a perturbative theory of nuclear forces*, Nucl. Phys. A **700**, 377 (2002) [arXiv:nucl-th/0104030].

Some Further, Phenomenologically Oriented Recent Developments in Nuclear Physics

- [21] V. Bernard, *Chiral Perturbation Theory and Baryon Properties*, arXiv:0706.0312 [hep-ph]. The most up-to-date introduction into Chiral Perturbation Theory and its extension to the one-baryon sector.
- [22] R. Machleidt, *Nuclear forces from chiral effective field theory*, arXiv:0704.0807 [nucl-th]. A sometimes provocative, hands-on account of χ EFT.
- [23] M. J. Ramsey-Musolf and S. A. Page, *Hadronic parity violation: A new view through the looking glass*, Ann. Rev. Nucl. Part. Sci. **56** (2006) 1 [arXiv:hep-ph/0601127]. Review on χ EFT in hadronic, parity-violating processes.
- [24] E. Epelbaum, *Few-nucleon forces and systems in chiral effective field theory*, Prog. Part. Nucl. Phys. **57**, 654 (2006) [arXiv:nucl-th/0509032]. Another hands-on interpretation and summary of χ EFT.
- [25] S. Scherer and M. R. Schindler, *A chiral perturbation theory primer*, arXiv:hep-ph/0505265. Exhaustive and pedagogic lectures on Chiral Perturbation Theory.

Some Recent Developments in Atomic Physics

- [26] E. Braaten and H. W. Hammer, *Universality in Few-body Systems with Large Scattering Length*, Phys. Rept. **428**, 259 (2006) [arXiv:cond-mat/0410417]. Much on more conventional models, but EFT is fully embedded.