

References and further reading

- The arguments of Lecture 1 are based on [1] (chapter 1).
- A reference for Lie superalgebras aimed at physicists is for example [2].
- The material of Lecture 3 is covered in many QFT textbooks. Our discussion is similar to [3] (chapters 33 and following).
- Lecture 4 is based on [4] (chapter I) and [5] (section 25.2).
- Lectures 5 and 6 are based on [4] (chapter II), see also [1] (chapter 1)
- Lectures 7 to 13 use the notation of [4] (up to X instead of A for the scalar in a chiral multiplet), but the logic is modeled after [1] (chapter 2). The discussion of R-symmetry in Lecture 10 is based on the arguments reviewed in [6] (sections 6.2.1 and 6.2.3). The discussion of fermionic mass matrices in Lecture 13 is based on the more systematic treatment of [5] (section 26.4). The difference between gauge covariant and gauge non-covariant SUSY transformations is discussed in component language in [6] (sections 6.3.1, 6.3.2 and 14.1.1). The discussion of FI term in Lecture 12 is modeled after the more detailed component-field treatment of [6] (section 14.4.3).
- Lectures 14 to 18 are largely based on [4] (chapters IV to VII). The coset approach to superspace of Lecture 14 is modeled after Cyril Closset’s lecture notes for this class last year, with some changes in notation. More information on the superdeterminants mentioned in Lecture 15 can be found e.g. in [7]. We refer to the same paper for more information on “chiral superspace” as a coset. The “compensating gauge transformation” in superspace described in Lecture 17 is also discussed in [5] (section 27.8).
- Lecture 19 is based on [4] (chapter XXII), with some changes in notation.
- Lecture 20 is based on [1] (chapter 2), [8], and [6] (chapter 14).

References

- [1] J. Terning, “Modern supersymmetry: Dynamics and duality,”
- [2] L. Frappat, P. Sorba and A. Sciarrino, “Dictionary on Lie superalgebras,” [arXiv:hep-th/9607161 [hep-th]].
- [3] M. Srednicki, “Quantum field theory,”
- [4] J. Wess and J. Bagger, “Supersymmetry and supergravity,”
- [5] S. Weinberg, “The quantum theory of fields. Vol. 3: Supersymmetry,”
- [6] D. Z. Freedman and A. Van Proeyen, “Supergravity,”

- [7] S. J. Gates, M. T. Grisaru, M. Rocek and W. Siegel, “Superspace Or One Thousand and One Lessons in Supersymmetry,” *Front. Phys.* **58** (1983), 1-548 [arXiv:hep-th/0108200 [hep-th]].
- [8] <https://people.sissa.it/~bertmat/susycourse.pdf>