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★ **An introduction to Kac-Moody groups over fields.**

EMS Textbooks in Mathematics.

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This book is a wonderful introduction to Kac-Moody theory that is perfectly suited for graduate students and advanced undergraduate students. Just like V. G. Kac's book *Infinite-dimensional Lie algebras* [third edition, Cambridge Univ. Press, Cambridge, 1990; MR1104219], it is a must-have in any library that is frequented by researchers interested in Kac-Moody theory.

The book basically consists of two parts: Part II on Kac-Moody algebras and Part III on Kac-Moody groups. Part II contains the basic information one needs to have about Kac-Moody algebras in order to be able to understand Part III. Part II actually may serve the additional purpose for students and researchers interested purely in Kac-Moody algebras of getting a quick somewhat detailed first glimpse at Kac-Moody algebras before moving on to studying Kac's comprehensive book.

Part III on Kac-Moody groups is the core of this book. It gives a detailed account on both minimal and maximal Kac-Moody groups. Here, the minimal Kac-Moody groups are the ones that admit a twin BN-pair and, consequently, an action on a twin building. Twin buildings and RGD systems are invaluable for the study of these minimal Kac-Moody groups; Appendix B provides a quick introduction to these concepts—for further reading on how to work with groups with an RGD system I strongly recommend (as does the author) the book *Buildings—theory and applications* [Grad. Texts in Math., 248, Springer, New York, 2008; MR2439729] by P. Abramenko and K. S. Brown. The link between minimal Kac-Moody groups and root group data is made in Section 7.3.

A maximal Kac-Moody group on the other hand is a completion of a minimal Kac-Moody group obtained one way or another. Over finite fields this leads to a very interesting class of locally compact groups; over the real numbers completions are likely to lead to very interesting completions of Kac-Moody symmetric spaces with, conjecturally, very rich geometric properties.

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