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Definitions; 3.4.2 Recurrent sequences and the ring R0(x) of fractions; 3.4.3 Eventually periodic sequences and the ring E; 3.4.4 When R is a field; 3.4.5 R[[x]] as an inverse limit; 3.4.6 Reciprocal Laurent series; 3.5 Generating functions; 3.6 When the connection polynomial factors 3.7 Algebraic models and the ring R[x]/(q)3.7.1 Abstract representation; 3.7.2 Trace representation; 3.8 Families of recurring sequences and ideals; 3.8.1 Families of recurring sequences over a finite field; 3.8.2 Families of linearly recurring sequences over a ring; 3.9 Examples; 3.9.1 Shift registers over a field; 3.9.2 Fibonacci numbers; 3.10 Exercises; 4: Feedback with carry shift registers and multiply with carry sequences; 4.1 Definitions; 4.2 N-adic numbers; 4.2.1 Basic facts; 4.2.2 The ring QN; 4.2.3 The ring ZN,0; 4.2.4 ZN as an inverse limit; 4.2.5 Structure of ZN
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6.5 Elementary description of d-FCSR sequences

Sommario/riassunto

Pseudo-random sequences are essential ingredients of every modern digital communication system including cellular telephones, GPS, secure internet transactions and satellite imagery. Each application requires pseudo-random sequences with specific statistical properties. This book describes the design, mathematical analysis and implementation of pseudo-random sequences, particularly those generated by shift registers and related architectures such as feedback-with-carry shift registers. The earlier chapters may be used as a textbook in an advanced undergraduate mathematics course or a graduate electrical engineering course; the more advanced chapters provide a reference work for researchers in the field. Background material from algebra, beginning with elementary group theory, is provided in an appendix.