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Worksheets for Chapter 18 -- Example OPA134 -- Mathcad Worksheets for Chapter 20 -- Example TL071 -- Mathcad Worksheets for Chapter 22 -- Part IV Special ICs Based on Classic OPA Technology (Balanced in – Single-Ended out) And Summary 1 -- Example SSM-2017 -- Mathcad Worksheets for Chapter 24 -- Summary 1 and Classic OPAs -- Part V Solutions for a Selection of OPAs with DC Input Bias Current Cancellation And Summary 2 -- Example LT1028 -- Mathcad Worksheet for Chapter 27 -- Tests with LT1028 (version after 2022): Mathematics vs Simulations -- Mathcad Worksheets for Chapter 29 -- Creation of the New Simulation Model LT1028N: A Realistic Noise-Based Proposal -- Mathcad Worksheets for Chapter 31 -- Example OP37 -- Mathcad Worksheet for Chapter 33 -- Summary 2 and Related OPAs with bcc -- Mathcad Worksheets for Chapter 35 -- Part VI Appendices & Index & Epilogue -- Appendix 1: List of Mathcad Worksheets -- Appendix 2: Literature and Data Sources -- Appendix 3: Software Tools -- Epilogue -- Index.

Sommario/riassunto

This extensively revised second edition provides ten additional new chapters on the noise-relevant handling of input bias-current-compensated operational amplifiers. Vinyl is back, tubes/valves are back, at the high end SMD-free analog amplification is beating digitalised chains, top microphone, and analog synthesizer manufacturers are still relying on good old operational amplifiers or fully discrete BJT, FET and/or tube-driven amplifiers. There is only one problem that has not been satisfactorily solved by the manufacturers: It is the noise produced by the active components and the useful reflection in simulation tools, in tables or graphs of datasheets / data books. Nowadays, surrounded as we are by so many digital tools, it makes sense to use them - even for analog enthusiasts. It saves cost and time to simulate before you spend money. This book introduces the LTspice software tool, a free software solution from Analog Devices Inc. (originally invented by Linear Technology and now integrated into ADI) that can also be used by true analog enthusiasts to simulate the noise production of their amplifier design. All we need is the right design approach to develop simulation models for the active components. This is already done for tubes/valves and BJTs in the 2nd editions of my books "How to Gain Gain" and "Balanced Phono-Amps". For classic operational amplifiers in the revised chapters of the 1st edition and for input bias-current-compensated operational amplifiers in the new chapters, the missing approaches and netlists are presented in this book. It cannot be denied that mathematical software such as Mathcad is extremely helpful in finding the right equations for the graphically presented noise curves we find in the literature. However, it also works well with other types of math software to meet the parameter requirements of the modelling approaches presented here for the input referred voltage and current noise of - not only - excellent sounding vintage operational amplifiers, applicable in the audio range from 1 Hz to 100 kHz. All Mathcad worksheets are freely accessible on Springer Link.