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Digital Signal Processing for Measurement Systems

Theory and Applications

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PREFACE

This book deals with the fundamentals of the Digital Signal Processing Theory, paying particular attention to its application to measurement issues. Therefore, the sampling theorem is thoroughly analyzed under different points of view, in order to emphasise its impact on the measurement accuracy. Different methods are also explained for the mitigation of the measurement errors that may arise from a not totally correct sampling strategy.

The discrete systems are also considered and analyzed, in order to frame the digital filters into a strict mathematical approach. The FIR and IIR filters are then introduced, and the basic guidelines for their specification, design and use are given.

This book is therefore mainly devoted to graduated and post-graduated students of technical faculties, and to professionals that want to have a closer look to the Digital Signal Processing theory in order to apply it to the practical situations in the correct and most effective way.