

Preface

The dissertation is without doubt one of the most important theses (or book!) an ongoing scientist writes throughout his career. While working on the topic is sometimes fun, sometimes frustrating and sometimes rather tedious, writing down the results is often considered boring.

It took me quite some time to push myself until I got started, but once the first few pages were there on the screen, I knew I was on the right track. A few weeks later, I had finished the first version of my thesis as a manuscript.

As usual, it took some iterations until most of the typing errors were fixed and all illustrations correctly formatted. Finally finishing my studies and being awarded the doctor's degree felt great – and I thought I was done with my dissertation.

Until almost a year later, an e-mail from my university arrived, asking if I would consent to be nominated for the Springer MedDiss 2015 programme. Of course I said “yes” without any hesitation, thinking to myself that it was an honour to be nominated, but that the chances of being actually selected for publication were not very high.

To my great delight, though, I was proven wrong, and the formatting and typesetting work started all over again – but knowing, while typing these sentences, that they would find their way into a “real” book rather soon is another good and rewarding feeling. Given the fact that a lot of dissertations end up in the university library and are never read again, this feeling is even better.

Although, at first glance, the book at hand seems rather thin, it is the result of over three years of research work. For technically-oriented work that involves a lot of software, it is sometimes hard to describe what you've done without just printing the source code.

Instead, I tried to describe on a not-too-detailed level what the main focus of the research was and how the system works in general. The first part gives an insight into the motivation of performing the work. A literature overview gives the reader the necessary knowledge of two different “worlds”. On the one hand, there is the clinical background which focuses on the relevant literature. On the other hand, there is the technical background that requires a more elaborate description of the available literature and provides the reader with the necessary skills and tools to understand the concepts behind the work. The goal of the project is described briefly in chapter 3, while more attention is paid to the Materials & Methods in the following chapter. Here, the technical details of the system and the measurements performed are described. The usual section “Results” lists the insights gained and the chapters “Discussion” and “Conclusion” give a critical insight into the work.

Collimator-Based Tracking with an Add-On Multileaf
Collimator

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realtime applications

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