

Increasing Chances of Survival through Mathematics

It is a Fraunhofer ITWM success story that has improved the lives of many people: thanks to the planning techniques for radiotherapy developed here, the survival chances of people suffering from cancer have increased significantly. These planning techniques were implemented by Varian Medical Systems, the world's largest manufacturer of radiotherapy equipment, which has been part of Siemens Healthineers since 2021. The collaboration is ongoing.



Radiation therapy is about a trade-off between treatment of the tumor and the risk of side effects. Market leader Varian Medical Solutions relies on software solutions from Fraunhofer ITWM.

The decision support components are used in planning tasks in many different applications in industry. The goal when used in radiotherapy is to reach a sufficiently high dose to the tumor while minimizing the negative impact on surrounding healthy tissue. In this way, severe side effects are avoided in treatments every day in many hospitals around the world, while at the same time increasing the likelihood of successful treatment.

Time as a Decisive Factor in Treatment

Improving planning efficiency as well as higher quality of treatment were the aspirations for the multi-criteria radiotherapy planning tool developed in the Optimization division from the beginning of the collaboration. "For many patients, the time factor is crucial to the success of treatment. We have given treating phy-

sicians the opportunity to create very good and personalized therapy plans without having to use a time-consuming trial-and-error procedure," says Dr. Philipp Süß, deputy department head "Optimization – Technical Processes."

Collaboration Continues

Palo Alto-based Varian Medical Solutions is the market leader for radiation oncology equipment. In 2016, the cooperation with Fraunhofer ITWM started; the joint product has been on the market since 2017 and has since been offered in more than 150 countries. Now the collaboration has been extended for another five years. "We are all proud of what we have already achieved together with one of the most successful global players in medical technology and look forward to continuing our joint work to further improve radiotherapy," said Süß.

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