

## **A Noble Cause - How Solving an Inverse PDE Problem May Help in the Fight Against Cancer**

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Cancerous tumors are the fastest growing entity in an adult human body, and this rapid growth is fed by the generation of new vasculature through a process called angiogenesis. As a result, a common avenue for cancer research is the development of anti-angiogenesis drugs. But how can you know if the treatment is working without requiring significant changes to common testing practices, such as the use of contrast-enhanced imaging? In this talk, we present the foundational quasi-1D mathematical model used by the radiology community to describe the flow of a contrast-agent and plasma in and around a cancerous tumor over the timescale of an imaging session. We will provide a short overview of previously applied approaches to improve upon the model in the hopes of reducing the time it takes to perform drug efficacy tests from months to weeks. In addition to presenting some newer approaches and promising results using model data, we will share areas of ongoing research.