Better, faster, and more insightful prostate cancer treatment

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Prostate Cancer By The Numbers


- 1 in 6 American men will receive a diagnosis of prostate cancer in their lifetimes.
- More than 2 million men in the United States count themselves as prostate cancer survivors.
- Prostate cancer is the most common men's cancer in America affecting 1 in 7 men.
- Nearly 1 in 5 men develop prostate cancer before they turn 85.

The American Cancer Society estimates about 1 in 6 American men will receive a diagnosis of prostate cancer in their lifetimes.

#1 Prostate Cancer

It is estimated that 1 in 19 South African men will develop prostate cancer.
Brachytherapy
Brachytherapy

Prostate

± 16 Catheters

Operation theatre for catheter placement

Treatment
Brachytherapy

Operation theatre for catheter placement

Treatment

Prostate

± 16 Catheters

± 200 stopping positions
Brachytherapy

- Prostate
- Bladder
- Rectum
- Urethra

± 16 Catheters
± 200 stopping positions

Operation theatre for catheter placement

Treatment
Brachytherapy
Brachytherapy
Treatment planning

The optimization problem:

• ±200 problem variables (stopping times)
• 2 objectives
• Directly based on clinical aims
• Non-linear, non-smooth, non-convex
• Limited time (patient is still waiting)
Treatment planning

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Human competition

- 18 prostate cancer patients
- Blinded comparison between 6 plans
- 3 experienced radiation oncologists

![Graph showing tumor coverage and healthy organ sparing]
In 98% of the cases, an EA plan was preferred
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First patients will be treated soon!

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Literature in this work


