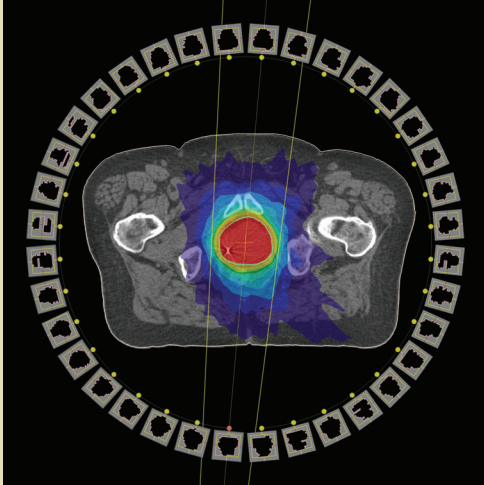# Panther TPS - PROARC

## Treatment Delivery in Motion



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"With PROARC, users can get more conformal dose distribution and see lower dose to critical organs on the DVH. Also treatment time decreases, which means more accurate treatment (due to less patient movement on table) and possibly more patient per day!"

Sevim ŞAHİN M.Sc.
Medical Physicist

Building upon years of research and collaboration with Siemens on the mARC delivery technique, PROARC brings to the clinic a more efficient treatment approach for the Artiste by taking Step & Shoot Intensity-Modulated Radiation Therapy (IMRT) to the next level. Using Prowess' Direct Aperture Optimization (DAO) technology, a single arc with ≥36 control points can be effectively optimized using fewer MUs than a sliding window arc.

The user interface and optimization objectives are the same for both PROARC and traditional IMRT plans. This makes switching between plan types quick since there is no need to modify existing IMRT constraint templates and no need for retraining.

### Benefits and features include:

Customized for Siemens mARC treatment delivery

- Direct Aperture Optimized Arcs Beam(s)
- Dynamic Conformal Arc
- Unflattened beams with up to 2,000MU/min. dose rate
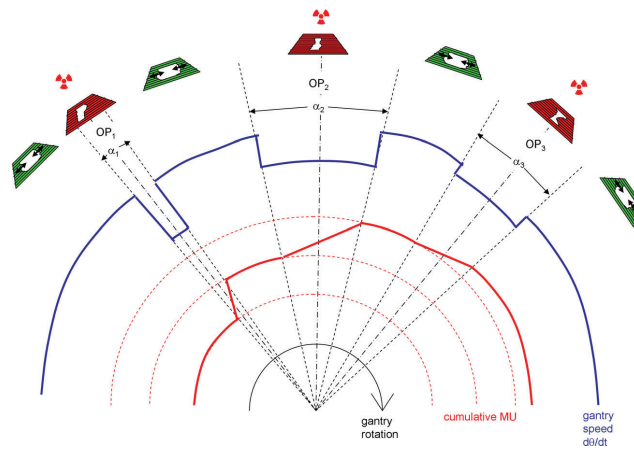
Dramatic reduction in IMRT treatment time

- Allows more patients per machine by shortening time slots
- Less change of intra-fraction movement

Complete user control

- Hybrid Step & Shoot, mARC support
- Arcs from 3 to 360 degrees of rotation
- Flexible control points spacing and alpha angles
- Optimize plans with single or multiple arc at once
- Provides an estimated delivery time
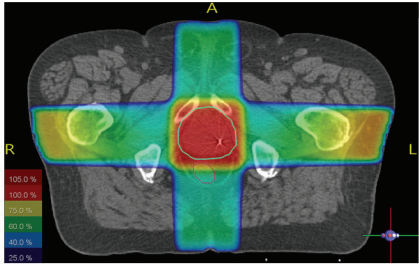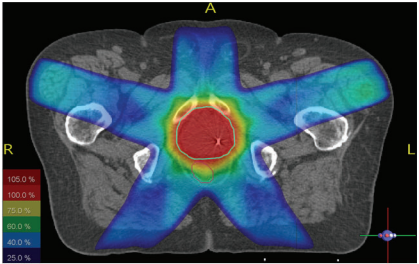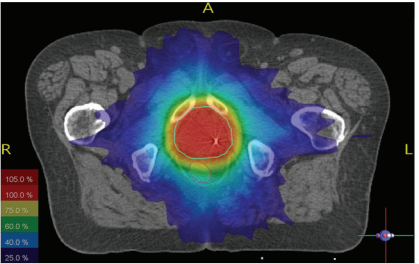
# Panther PROARC (mARC) Approach

With Siemens mARC delivery approach, beam-on segments are interweaved with beam-off segments while the gantry is continuously rotating. During the beam-on segments, dose is delivered at a high rate and the MLC aperture is fixed. For the beam-off segments, the MLC transitions between apertures and no dose is delivered.



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## Other Key Features:

- DAO Optimization is used to ensure machine parameters such as dose rate, gantry speed, collimator speed, and leaf movement are enforced
- Constraints are interactive during optimization and provide feedback
- Optimize directly on top of existing dose to create and analyze boost plans
- Quick plan conversions for simple QA checks
- Workflow driven user interface, based on Microsoft's ribbon technology

| Treatment Type | Conformal (4 beams) | Step & Shoot IMRT (5 beams) | PROARC IMRT (1 arc) |
|---|---|---|---|
| Delivery Time | ~5 minutes* | ~5 minutes* | ~2 minutes* |
| Dose Distribution |  |  |  |
| Goal | Improve Conformal plan quality & maintain delivery speed | | Maintain IMRT plan quality & improve delivery speed |

**\* Actual delivery time can vary greatly depending on treatment site and plan complexity**