PROWESS

# Panther DAO MLC IMRT

## Revolutionary Optimization Technology

*"The DAO IMRT planning has consistently generated high quality IMRT plans that require the least amount of delivery time as compared with other commercial planning systems. Through hundreds of IMRT verifications, where the calculated doses and the measured doses are compared, the physicists are very satisfied about the dose calculation accuracy of the systems. The dosimetrists using the systems for generating plans are very happy about the ease of use and intuitiveness of the operations."*

**Cedric X. Yu, D.Sci, FAAPM**
**Professor of Radiation Oncology,**
**Director, Division of Medical Physics**
**University of Maryland,**
**School of Medicine**

Panther DAO IMRT takes IMRT to the next level with Direct Aperture Optimization (DAO). Powered by a new 3D convolution/superposition dose calculation engine, and an algorithm which includes all the delivery constraints within the optimization process, Panther DAO IMRT is the only true WYSIWYG inverse planning system on the market, and the first and only commercial treatment planning system to incorporate DAO.

### Simplified IMRT

Typically, traditional IMRT techniques use a two-step approach to arrive at a final treatment plan. First, a fluence map is optimized from each beam direction (optimization). Then, the set of aperture shapes that most closely reproduces each fluence map (leaf sequencing) is determined. This approach is flawed because the delivery constraints are not easily enforced during the optimization; and the number of segments is typically 2-3 times the number of intensity levels.

With DAO, the positions of the leaves and relative weights of the individual apertures are simultaneously optimized. DAO eliminates the leaf-sequencing step. Since the user pre-specifies the number of apertures to deliver from each beam direction, resulting plans are much more efficient.

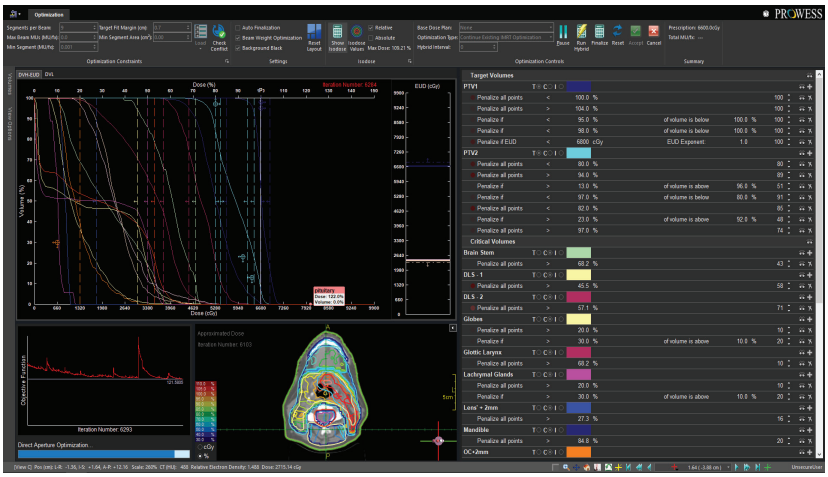
### Clinical Benefits of DAO IMRT

Up to 65% reduction in segments
- Less wear-and-tear on equipment
- Lower equipment maintenance costs
- Longer equipment life span
- Simplified Quality Assurance

Up to 60% reduction in Monitor Units (MUs)
- Reduced total delivery dose
- Fewer radiation protection concerns

Less time required to deliver treatment
- Improved patient comfort
- More accurate delivery of dose
- Ability to treat more patients in the same amount of time

# Panther DAO MLC IMRT Features



## Key Features

### State-of-the-art Optimization Algorithm

- User selectable number of segments
- Quick convergence ability of the algorithm reduces the time for optimization
- Eight different types of constraints supported, including Equivalent Uniform Dose (EUD)
- MLC leaf increments as small as 1mm are possible.
- Voxel spacing as small as 1mm x 1mm x CT slice thickness
- Absolutely no deterioration in the quality of the DVH graphs after applying the optimization results
- Non coplanar beams support for IMRT

### Efficient User Interface

- Single window interface for the complete Optimization procedure
- Live graphical user interface to alter constraint parameters during theoptimization cycle in real time.
- Can stop, quit and continue optimization as needed
- Constraint Libraries supported
- Display of fluence maps for each selected segment of the beam in BEV
- Tabular display of sequential fluences for the segments of each beam
- Ability to allow user to change the sequence of the segments in any of the beams
- MU Display for each of the segments in total or per fraction
- Plan template managers allow saving and retrieval of IMRT plans at ease
- One button push to IMRT phantom for QA

## Standard Features

- Fully DICOM 3.0 and DICOM RT compliant for import and export
- Support for CT, MRI, PET images
- Automatic Image Fusion by maximizing Mutual Information
- Plan with up to five fused and registered image series
- Support up to 60 contours
- Undo, Redo contouring utility
- Create new volumes with Asymmetric margins and Boolean operators
- 512 x 512 DRR with enhancement tools
- Single interface window throughout the planning procedure
- CT view in 3D with efficient multi-planar reconstruction.
- Plan comparison
- User selectable window layout
- Zoom any view to full screen
- Isodose, Iso-Fill and Colorwash features
- Beam, Plan templates
- Photons and Electrons beams can be combined
- Planning on top of existing dose
- Side by side plan comparison
- DVH comparison and Dose Volume Limit evaluation
- Multiple dose calculation algorithm support
- Relative and Absolute dose values
- User defined calculation matrix
- Non-coplanar beams planning

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