The clinical solution for inverse planning and IMRT

Pinnacle^3

Inverse planning for IMRT. It's fast, easy, and accurate with P^{3}IMRT—You can plan your patients with confidence.

- Convolution superposition dose accuracy
- Superior automatic contouring tools
- Complete integration with Pinnacle^3 3D planning and SmartSim CT simulation
- Fast plan optimization using dose or dose and volume objectives
- Combined forward and inverse plans
- Both objectives and true constraints

Contouring

- Display realtime 2D or 3D patient views in any plane
- Contour internal structures without outlining the external patient contour
- Use image fusion to localize target volumes precisely on CT, MR or PET images
- Define target volumes and critical structures quickly, using automatic, semi-automatic, interpolation, copy, or manual contouring tools
- Edit contours easily with the variable-sized
- Paintbrush tool
- Automatically create multiple PTVs, GTVs, or CTVs with different variable 3D margins

Beam definition

- Automatically place standard IMRT beam sets using
- Pinnacle^3 HotScripts

Dose-based optimization

- Specify dose and dose or volume objectives
- Define minimum, maximum, and uniform dose objectives
- Define true minimum, maximum, and dose uniformity constraints
- Optimize beam weights
- Optimize segment weights
- Save and recall standard IMRT protocols
- Account for previously delivered doses when optimizing boost plans

Biological optimization

- Optimize equivalent uniform dose (EUD)
- Optimize tumor control probability (TCP)
- Optimize normal tissue complication probability (NTCP)
- Optimize probability of complication-free tumor control (P+)
- Specify biological objectives with biological or dose constraints
- Compare plans using dose-response plots
- Create an editable database of dose-response values

IMRT delivery

- Design IMRT compensators
- Create step-and-shoot multileaf collimator (MLC) segments for Varian, Siemens, Elekta and Mitsubishi accelerators
- Create sliding window MLC segments
- Transfer plans to IMPAC, VARiS, Lantis and desktop for delivery

PHILIPS

Dose calculation

The Pinnacle^3 Convolution Superposition algorithm, in routine clinical use by over 700 radiation oncology centers, provides the dose computation accuracy required for intensity-modulated treatments, correcting both primary and scattered radiation for three-dimensional anatomy and heterogeneity effects. The Delta Pixel Beam algorithm developed by Philips permits rapid optimization of the plan without compromising the accuracy of the dose calculation. A finite size pencil beam calculation is performed to add or subtract the effects of a change to an incident fluence element in the dose array. Convolution superposition dose accuracy is maintained by using the pencil beam algorithm to compute only the resulting difference in dose due to a change in incident fluence.

Plan evaluation

- Evaluate dose volume histograms (DVHs) as they update in real time during plan optimization.
- Compare 2D or 3D IMRT dose distributions in side-by-side windows.
- Select the optimal plan by viewing DVHs for multiple plans on a single graphic display.

Plan validation

- Save and recall your own QA phantoms.
- Compute dose for an optimized plan at a specified depth in a flat water phantom.
- Easily and quickly transfer completed IMRT plans to your QA phantom.
- Transfer data to your film dosimetry system.
- Generate a composite dose map in any arbitrary plane.

Developed in partnership with RaySearch Laboratories AB, in Stockholm, Sweden

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Printed in The Netherlands
4522 962 41771 * SEP 2009

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