

Verifikation der IMRT am DKFZ

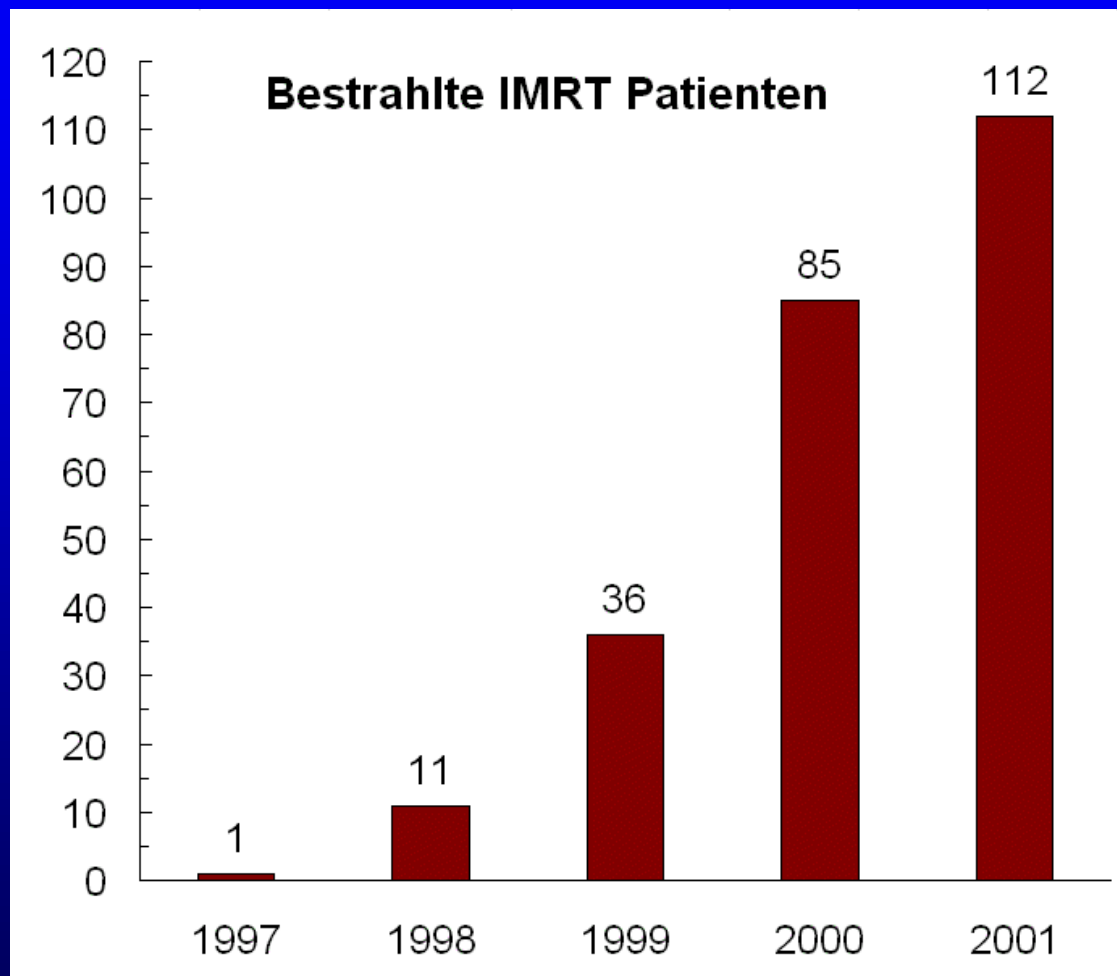
Status Quo / Perspektiven

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- **Primus 6 + 15 MV Photonen**
- **Primus 6 MV Photonen**
- **KONRAD / Virtuos**

IMRT Patients treated in Heidelberg

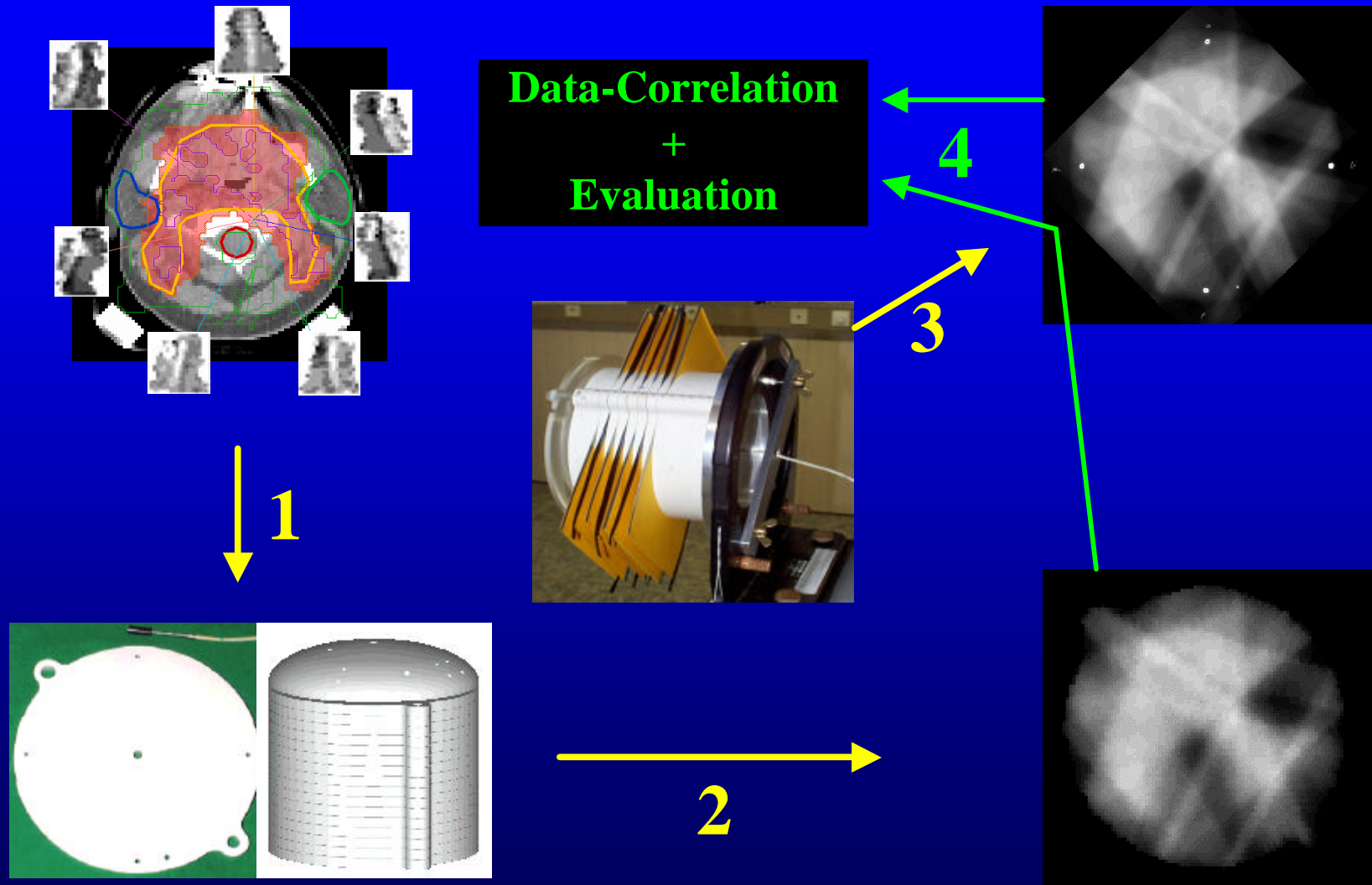


Patient # of Dez. 2001

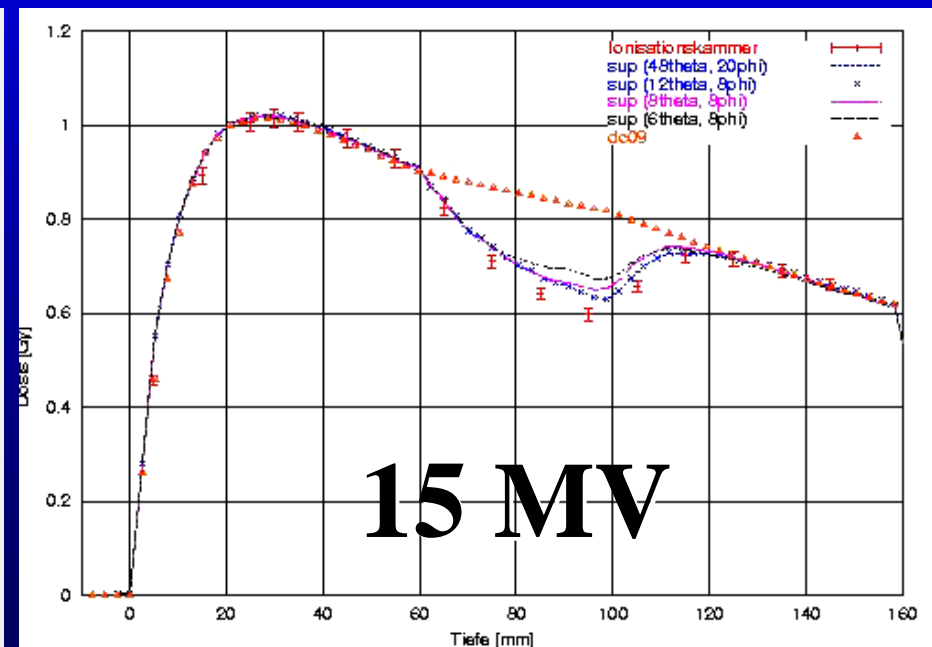
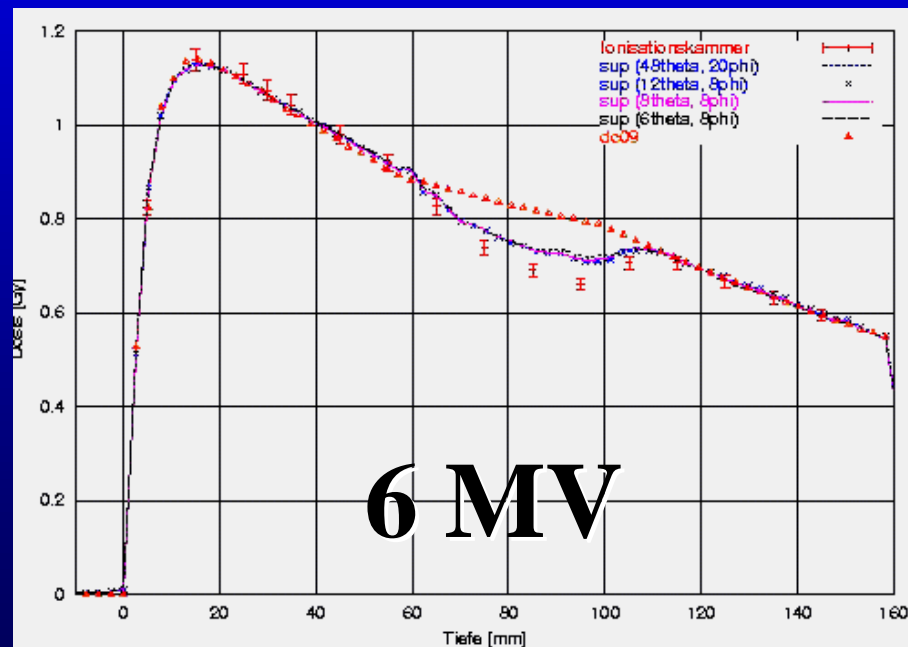
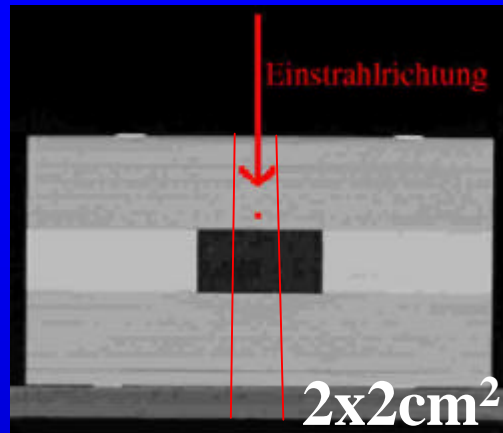
**Skull base
Head/neck
Prostate
Paraspinal
Mesothelioma
Breast**

Total: 246

IMRT Verification Concept at DKFZ

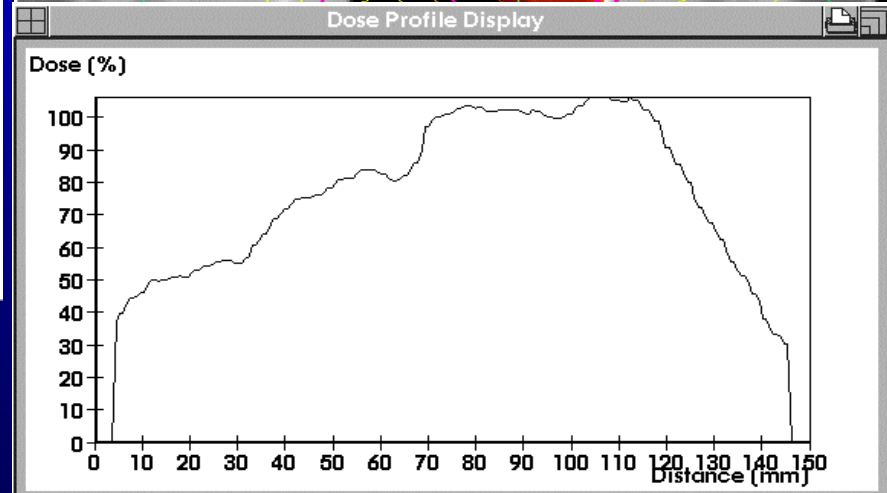
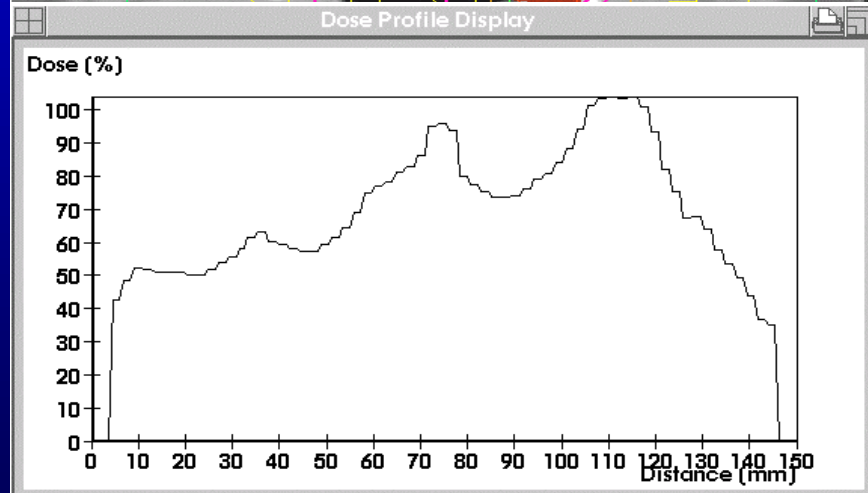
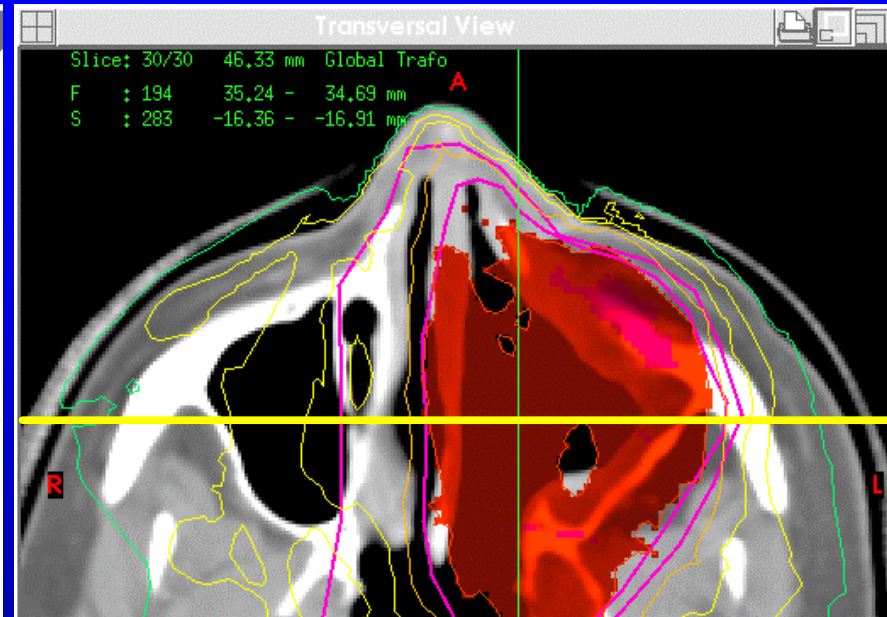
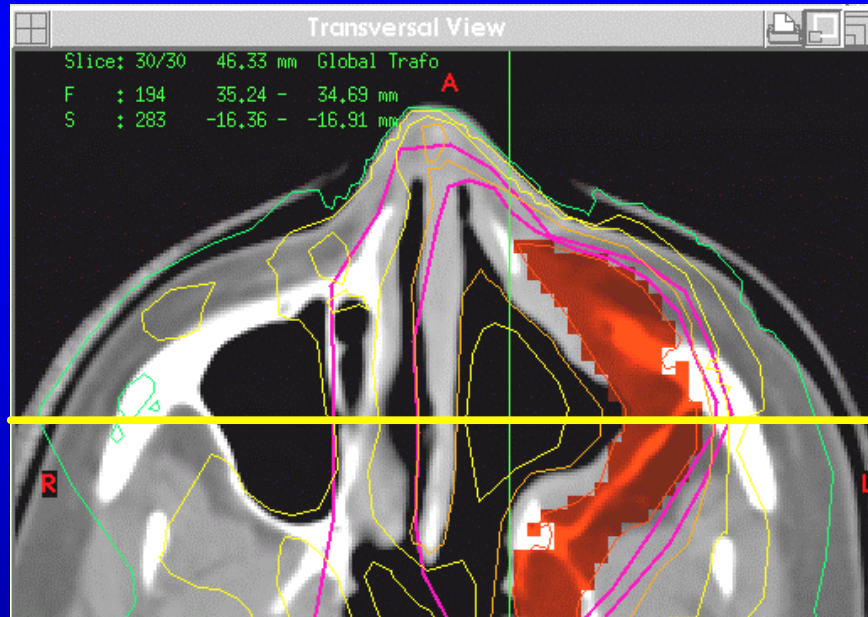


dose calculation inside heterogeneous tissues

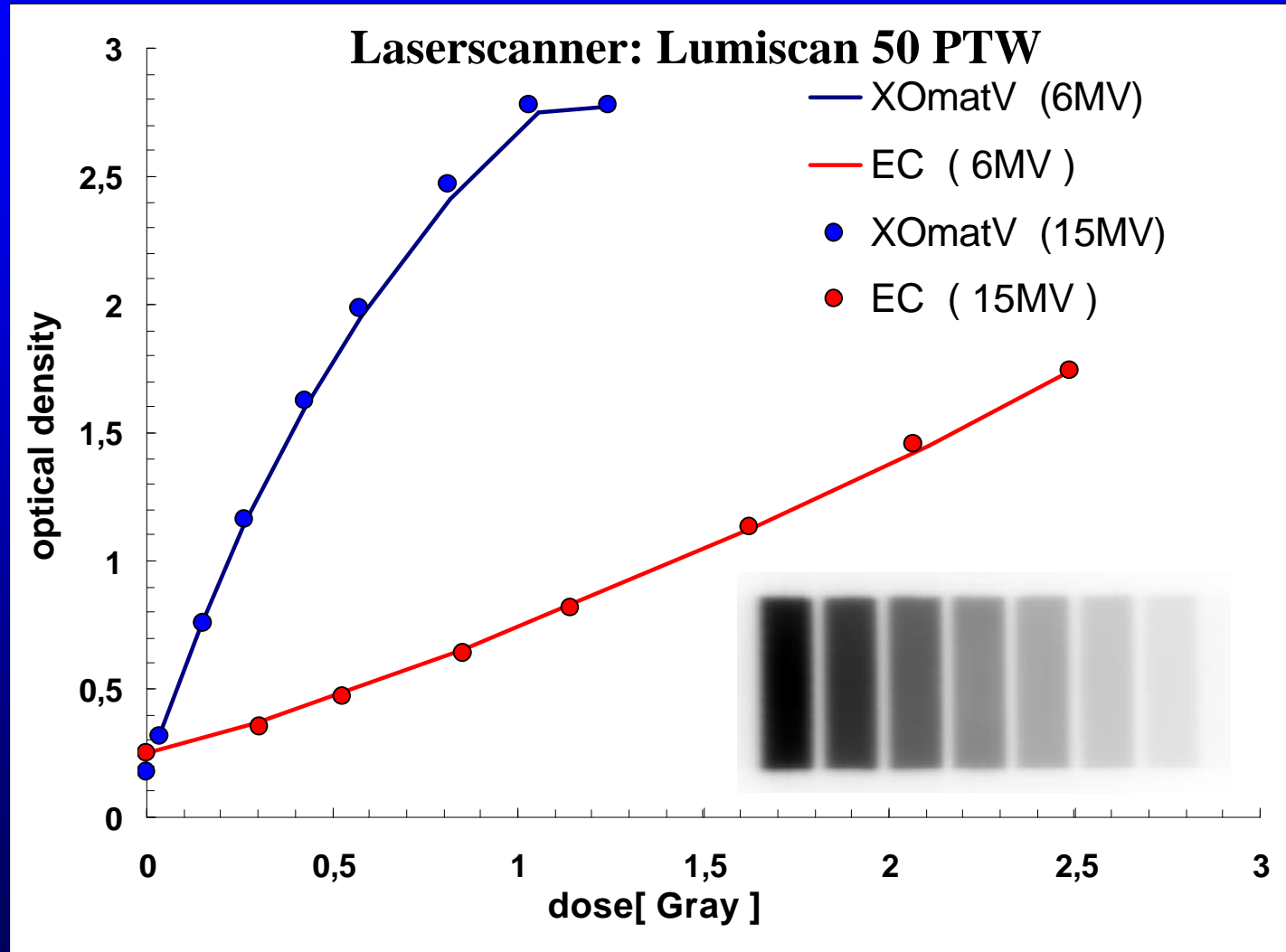


Superposition / density scaled

PBC / waterequivalent depth

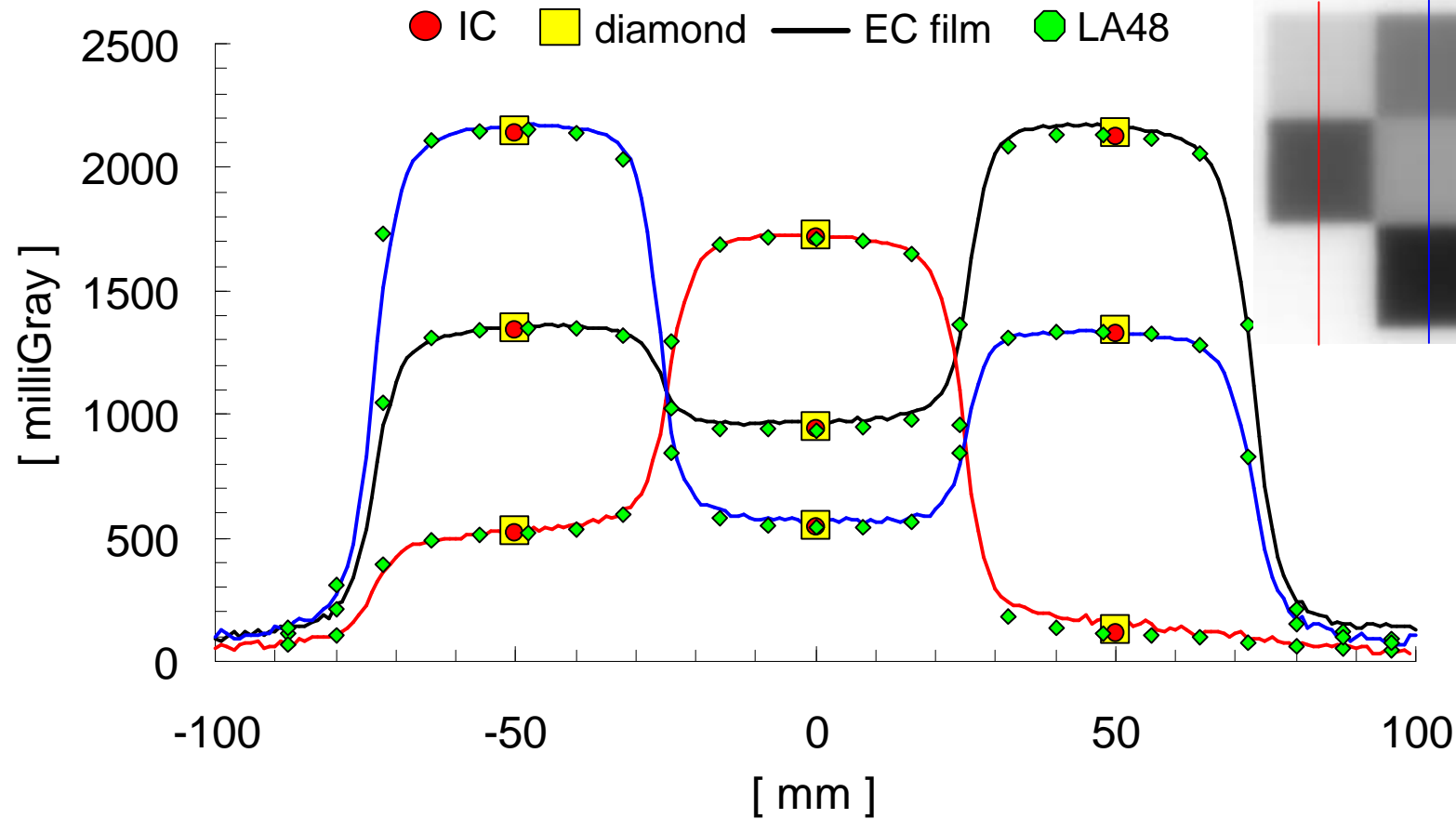


optical density to dose relationship



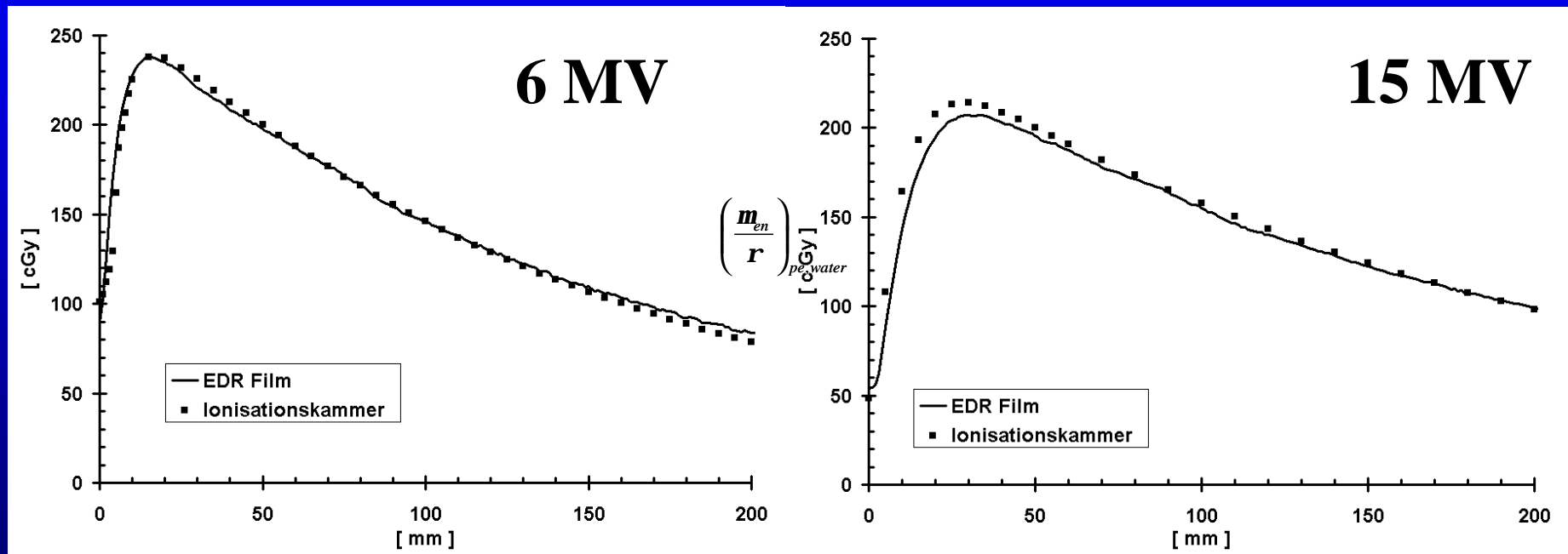
Dosimetric Comparison

6 MV photons / SSD = 94 cm / depth = 6cm water

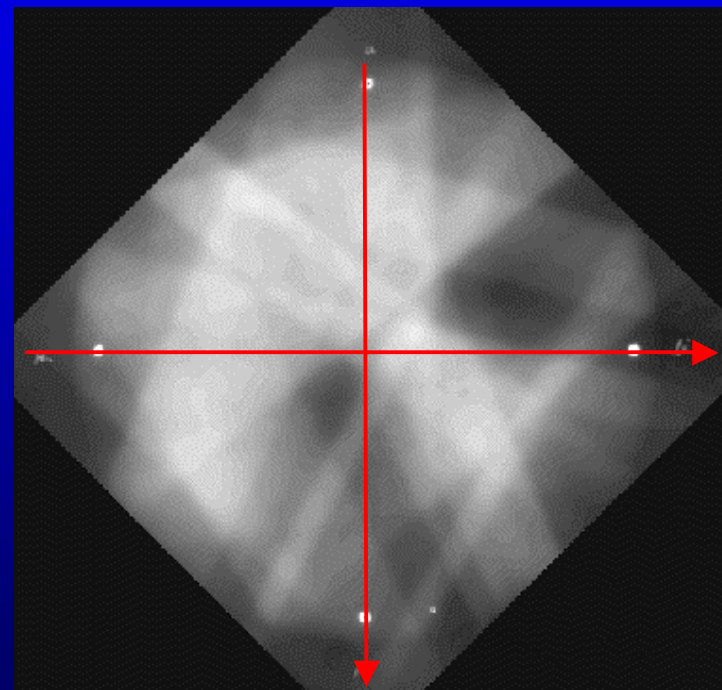
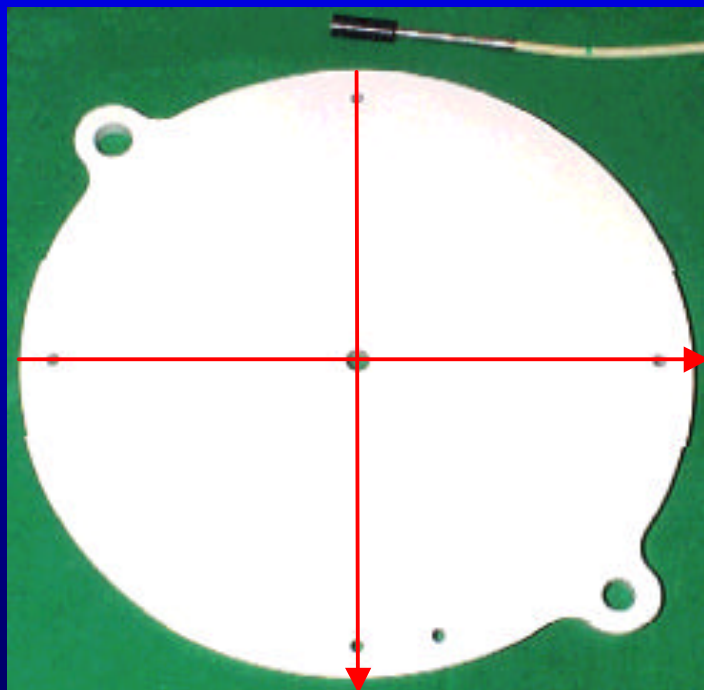


Dosimetric Comparison

FS: 3x3 cm² SSD = 95cm

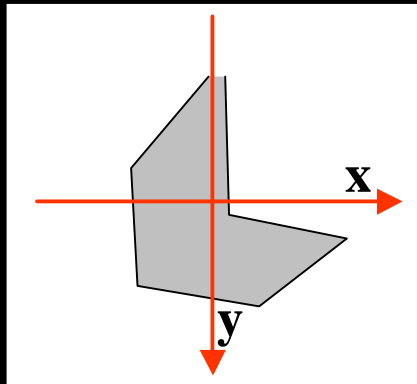


Definition of a Coordinate System

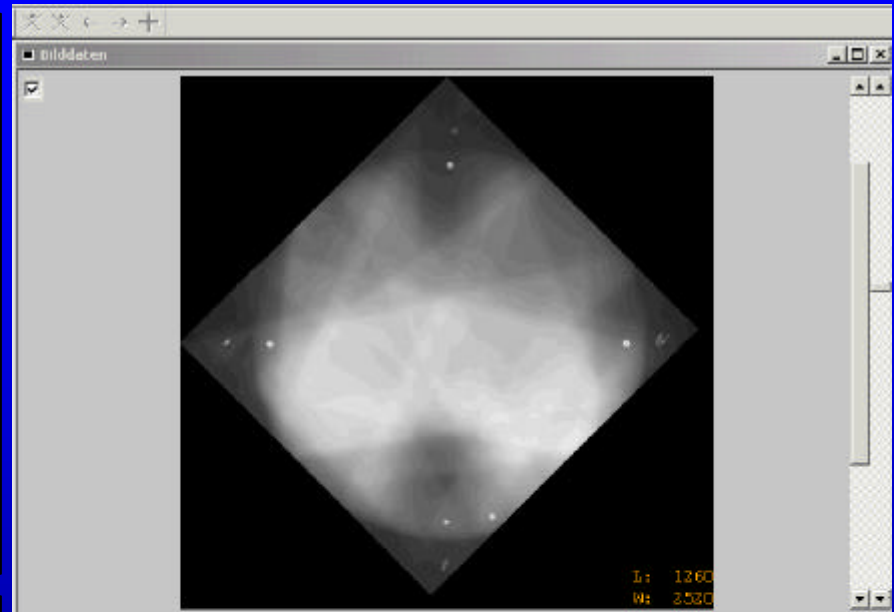
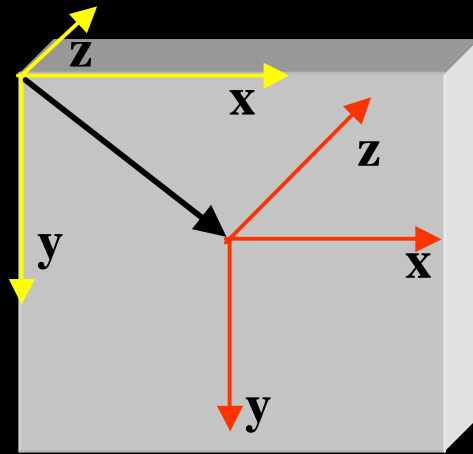


IMRT Software: Data - Correlation

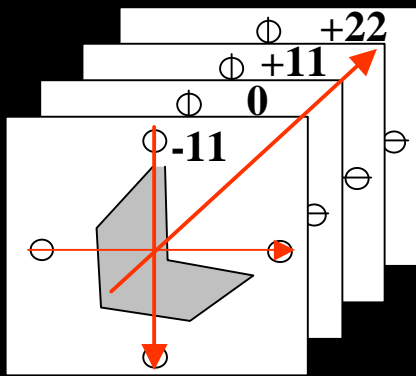
Film



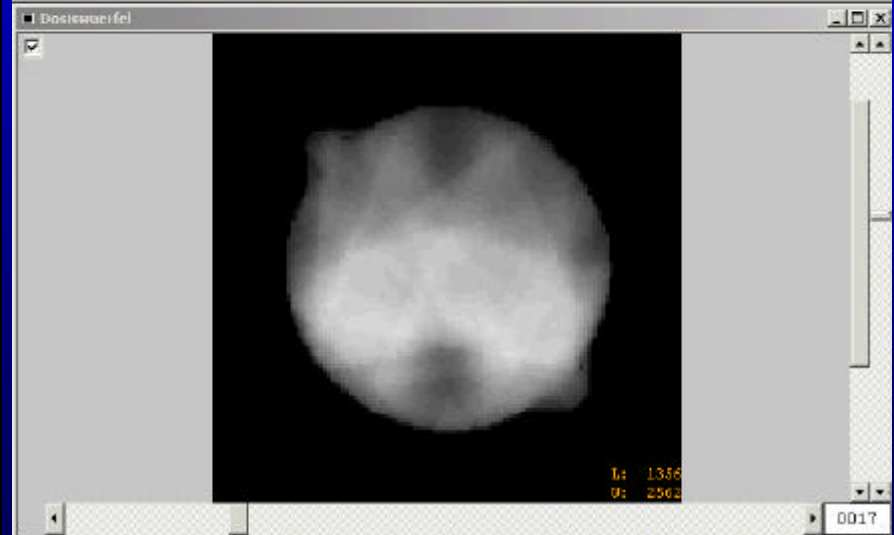
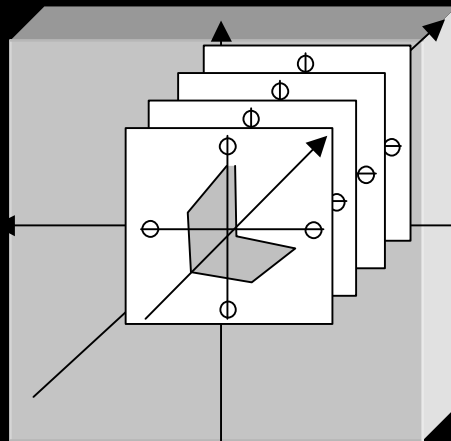
Dose Cube



Film



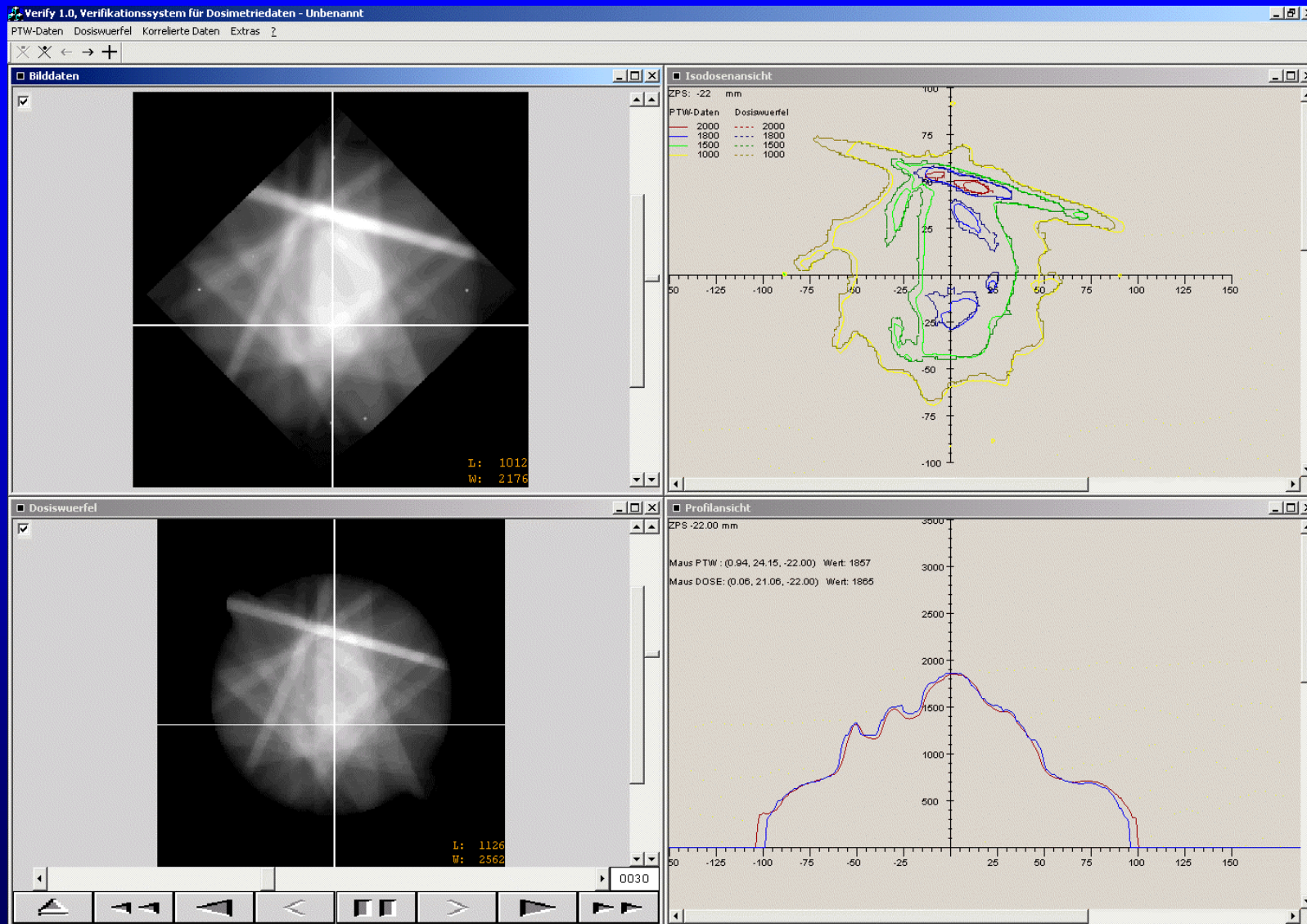
Dose Cube



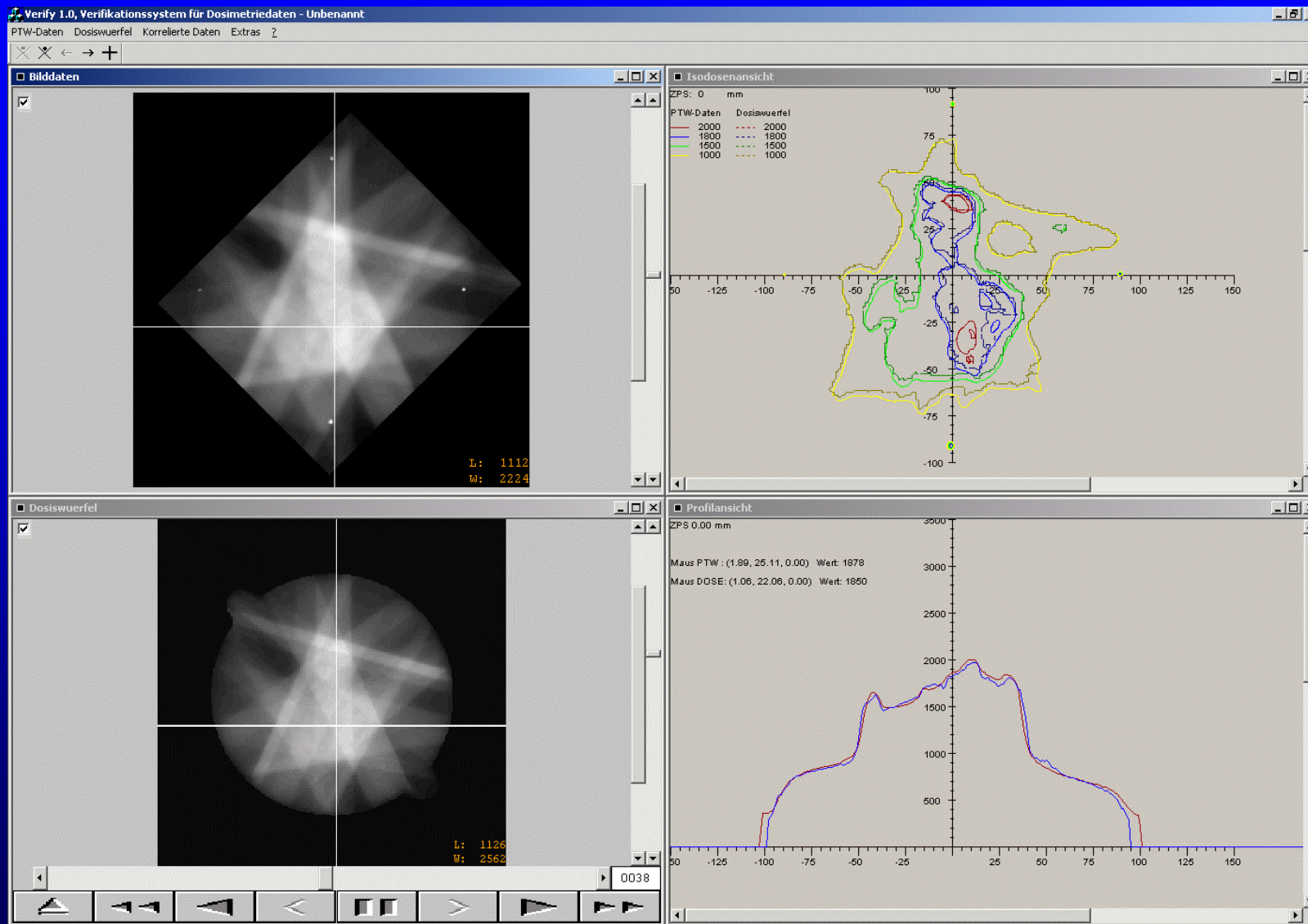
Beurteilung der IMRT - Verifikation

- Überlagerung von Isodosen und Profilen
- Darstellung von Dosisdifferenz-Matrizen
- Vergleich von Punkt- oder Flächendosen
- ? Index (Low et.al.)

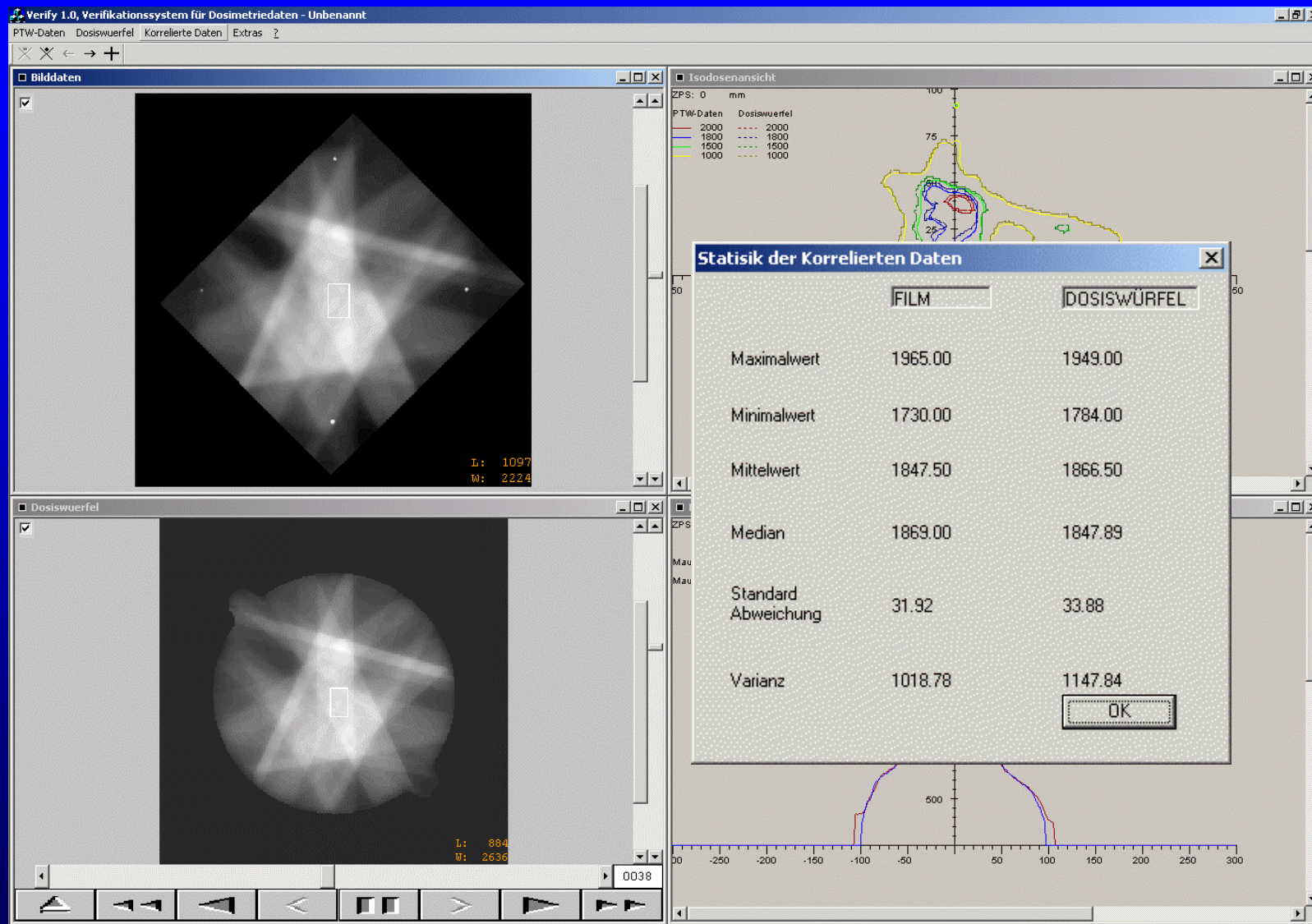
IMRT equipment / IMRT Software



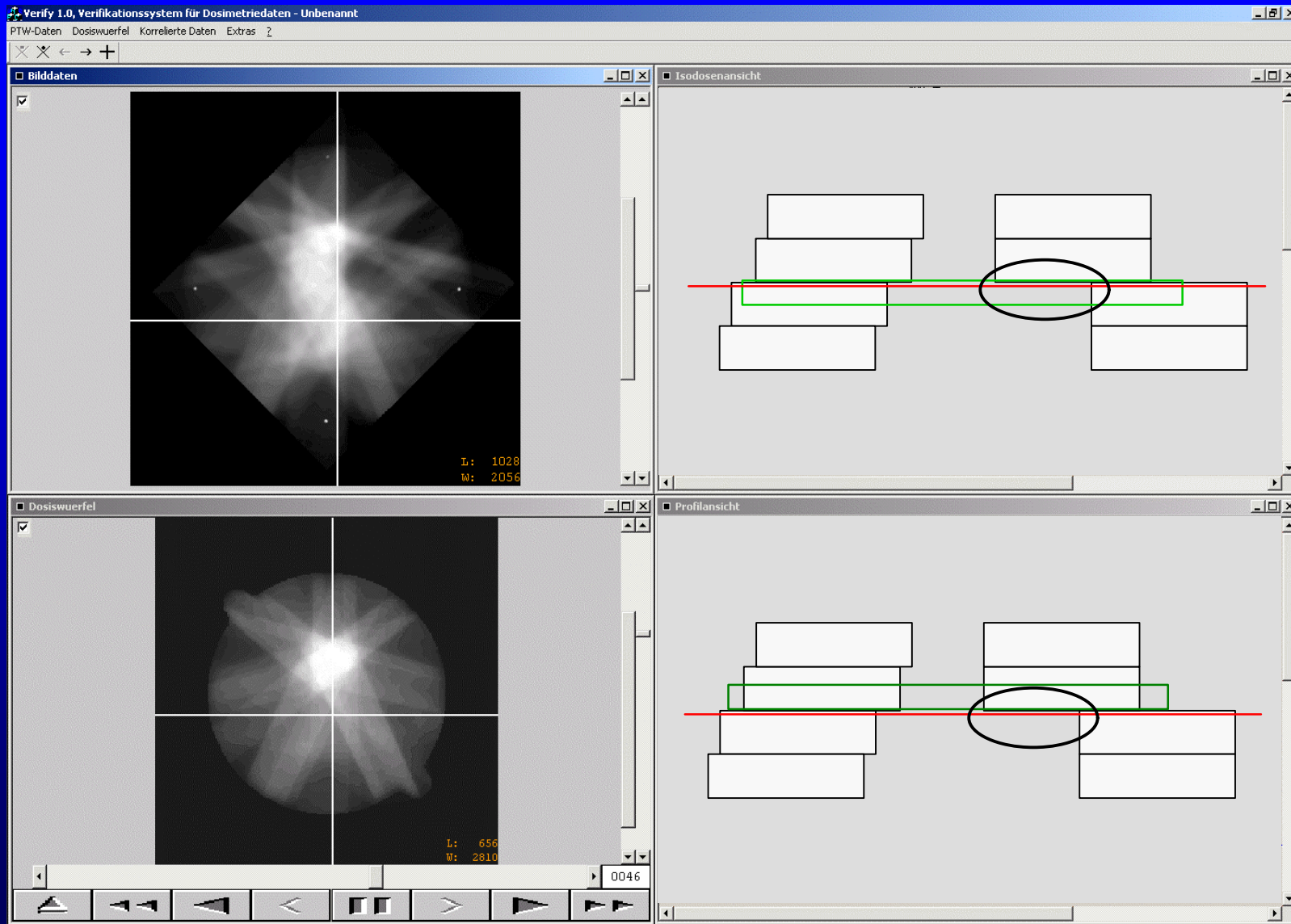
IMRT equipment / IMRT Software



IMRT equipment / IMRT Software

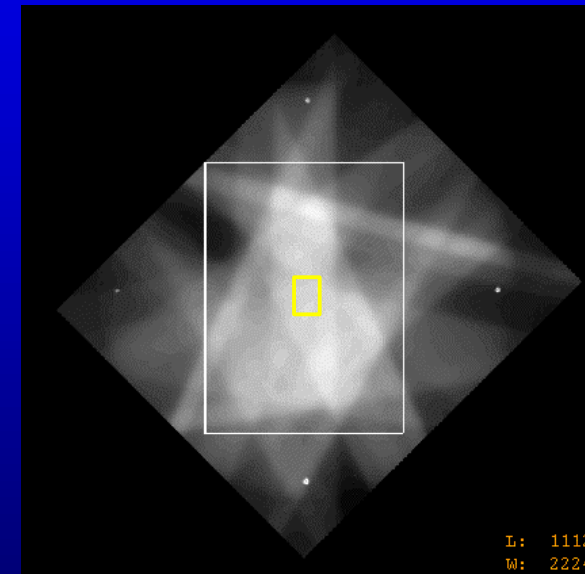
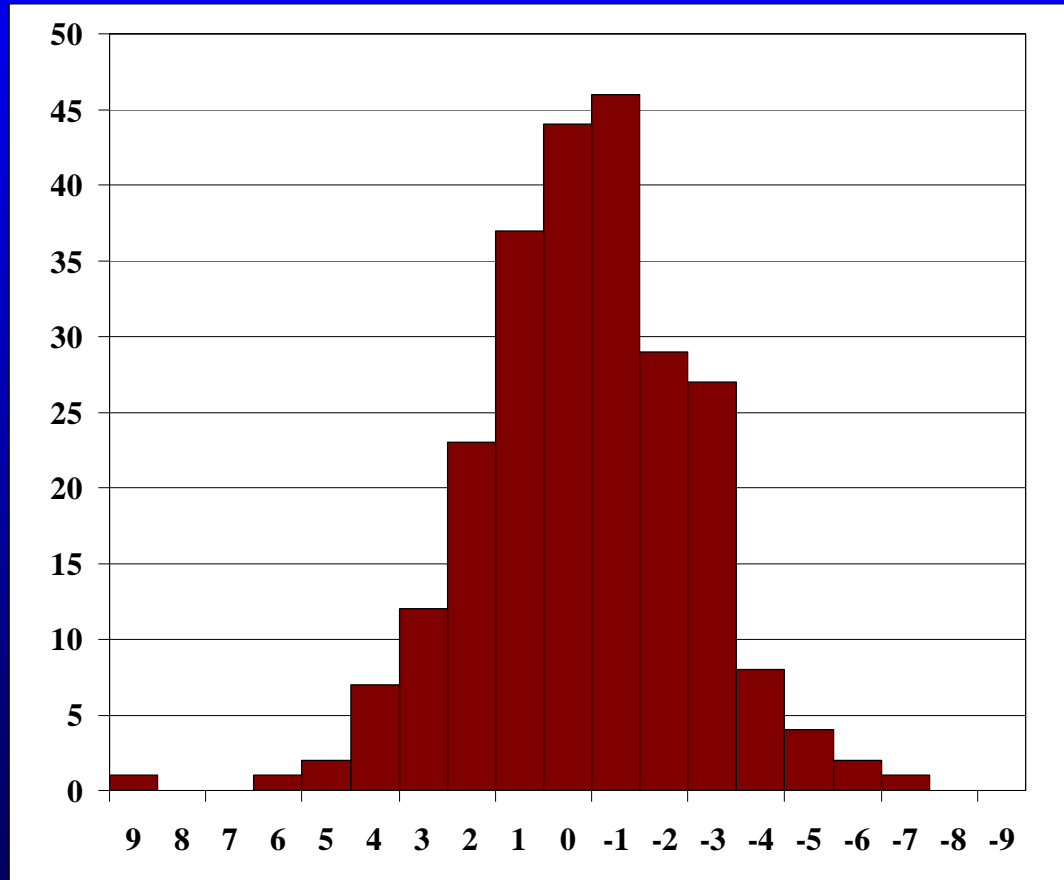


IMRT equipment / IMRT Software

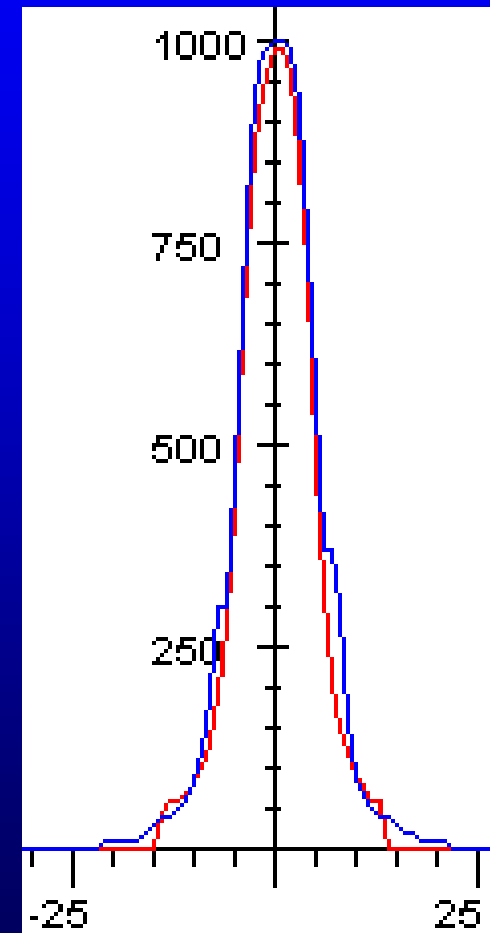
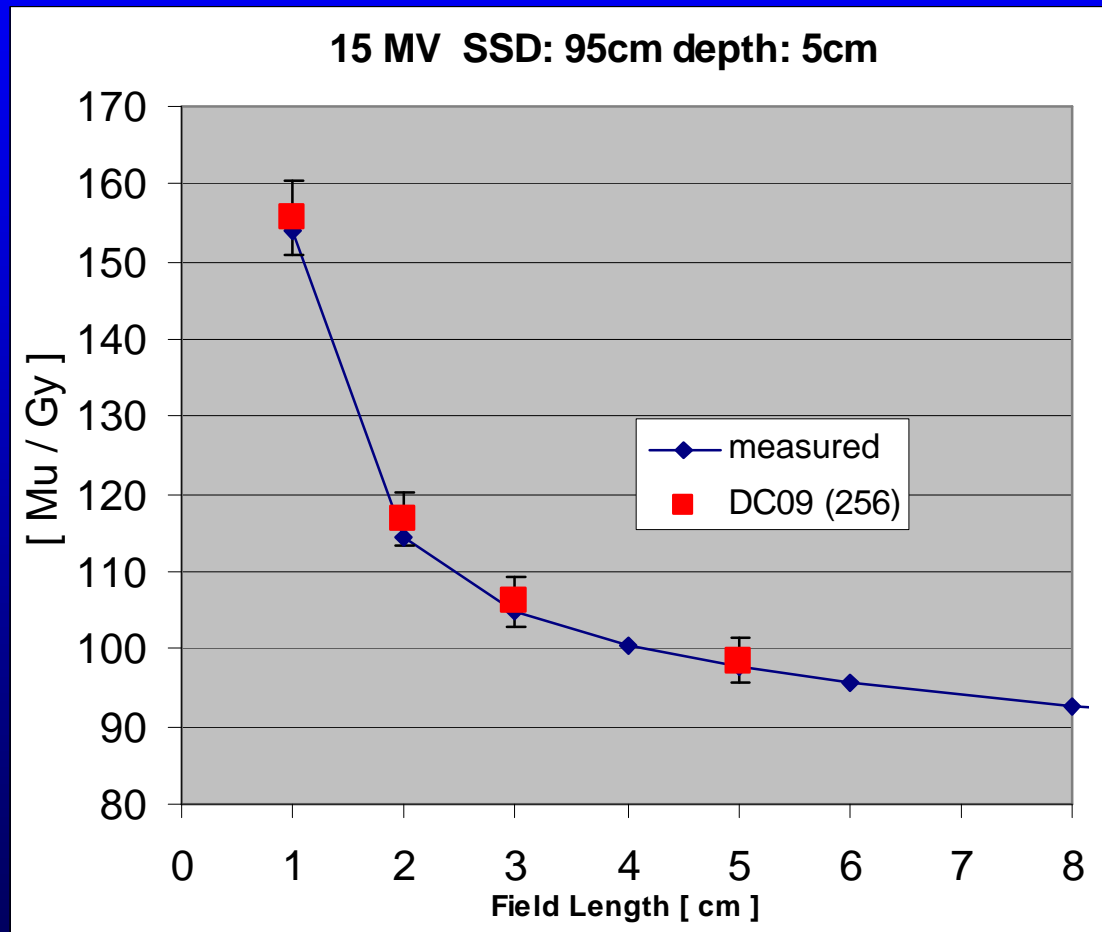


Results

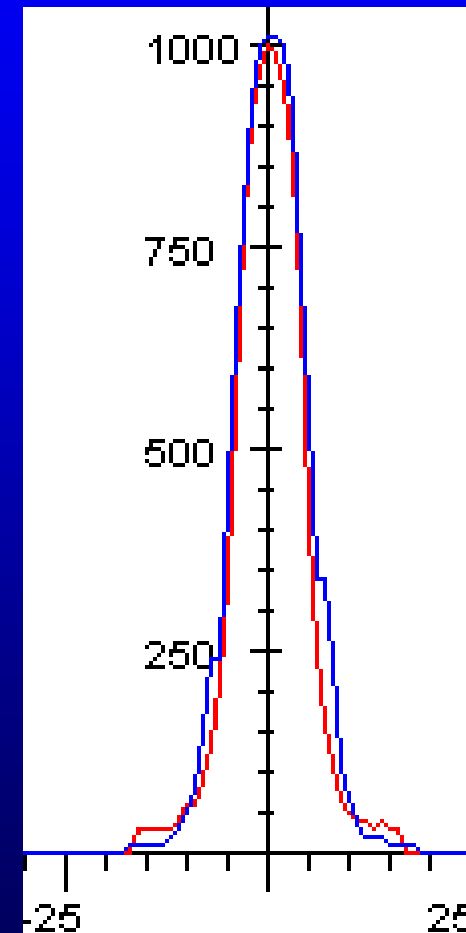
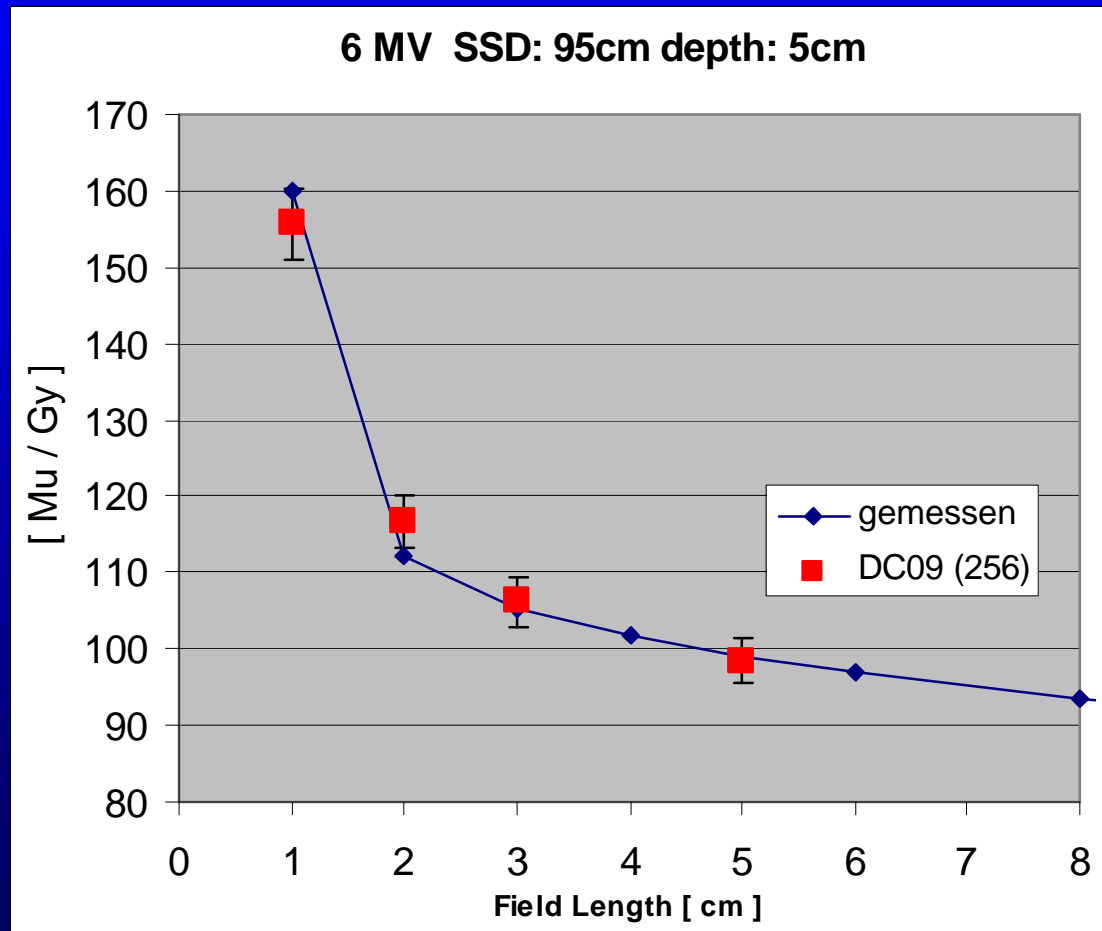
$$\frac{\sum_{1}^n (Dose_{measured} / Dose_{calculated})}{n}$$



Rechengenauigkeit / Rechenauflösung



Rechengenauigkeit / Rechenauflösung



IMRT Verifikationsprozedur / Status Quo

Verifikationszeit: < 2 h

Adaptive Strahlentherapie

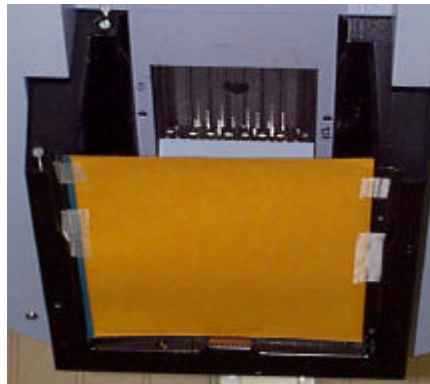
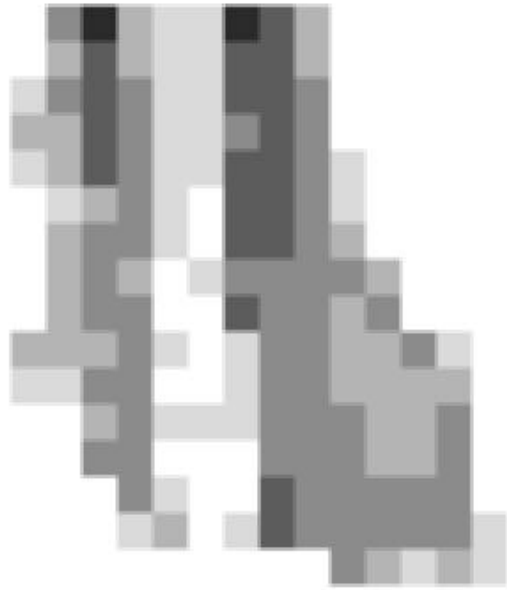
IMRT Verifikationsprozedur / Perspektiven

**Verifikationszeit: Applikation 1 Fraktion
(7 bis 20 min)**

Perspektiven

QA of IM Delivery

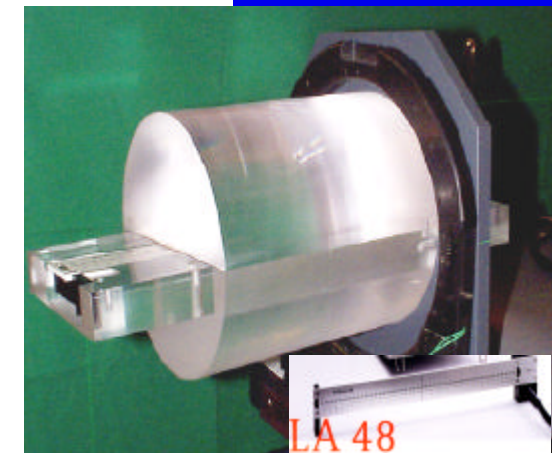
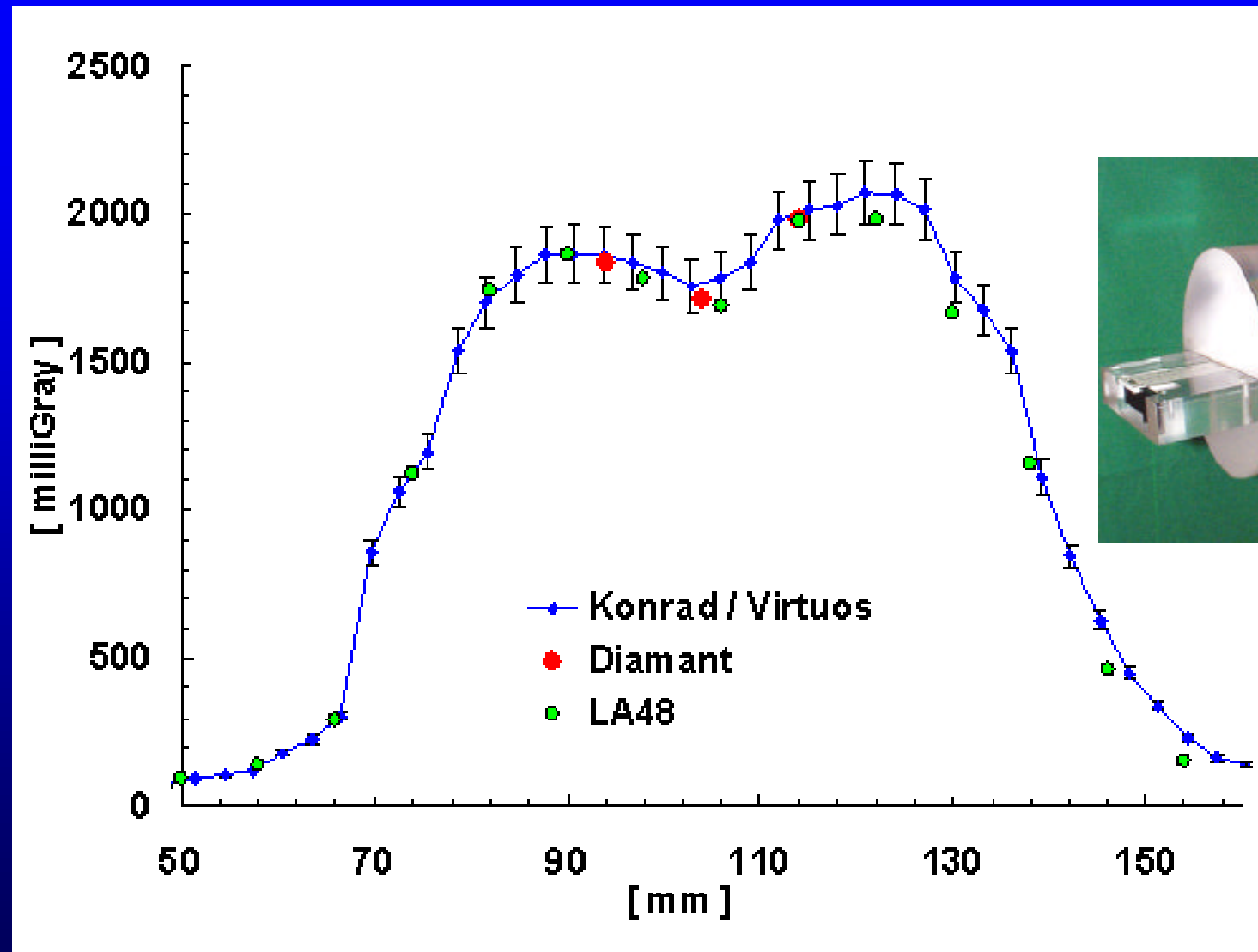
**calculated
Intensity-Matrix**



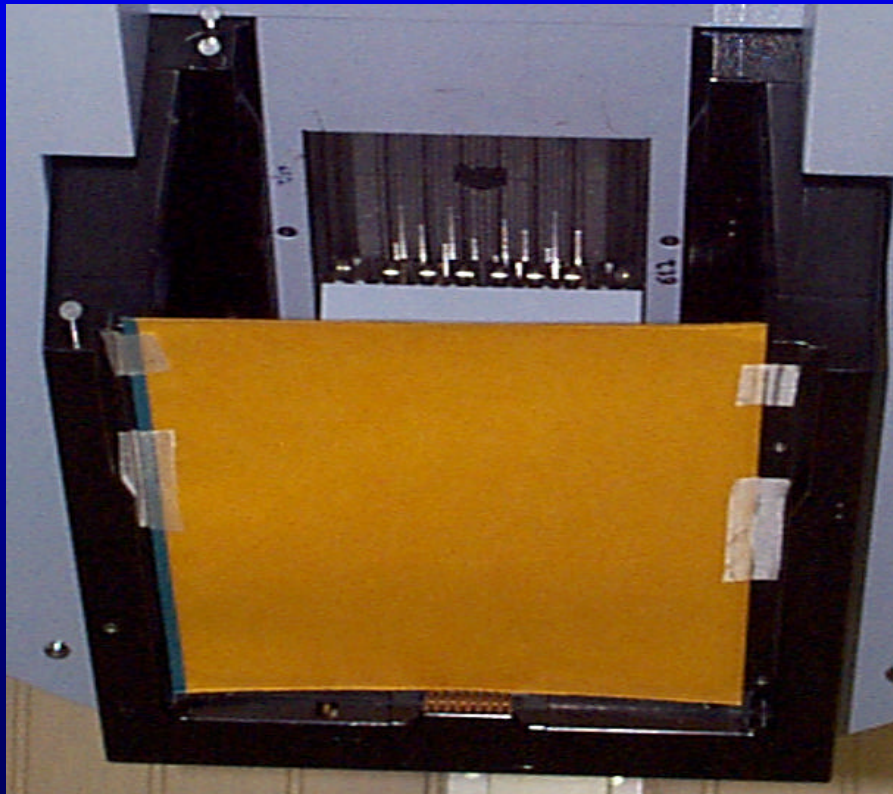
**irradiated
Intensity-Matrix**



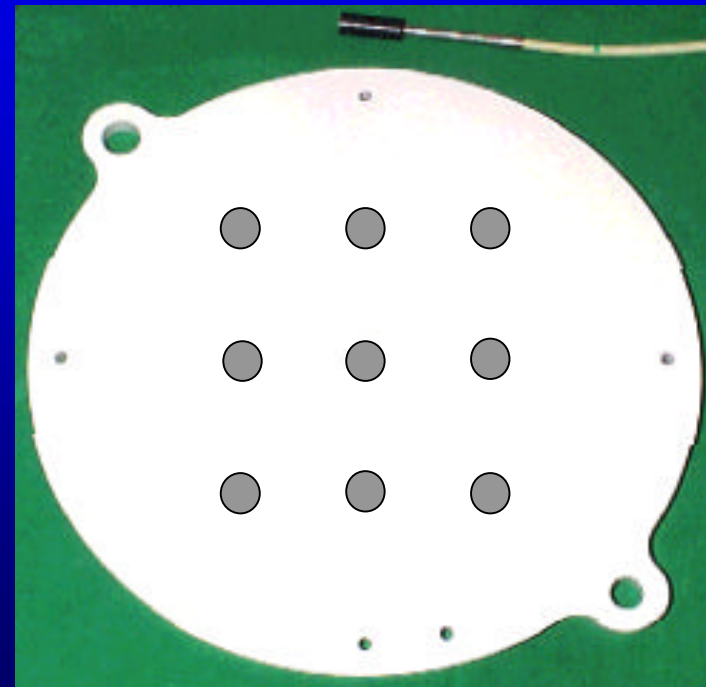
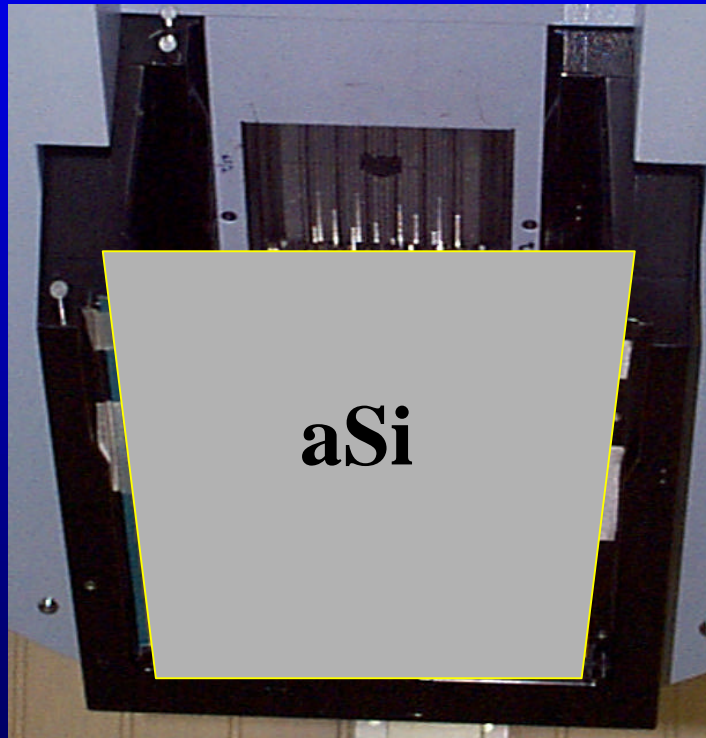
Perspektiven



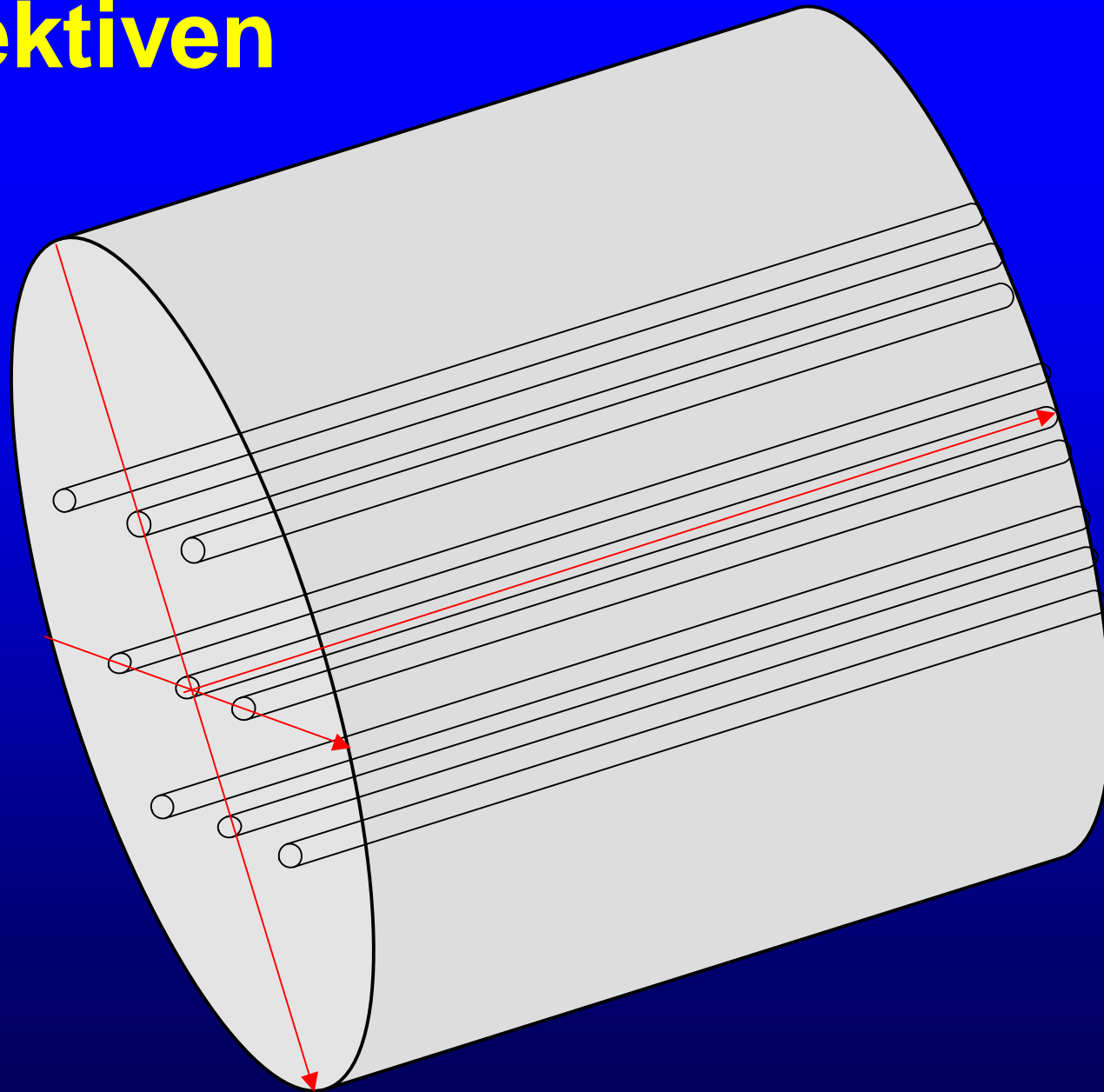
Perspektiven



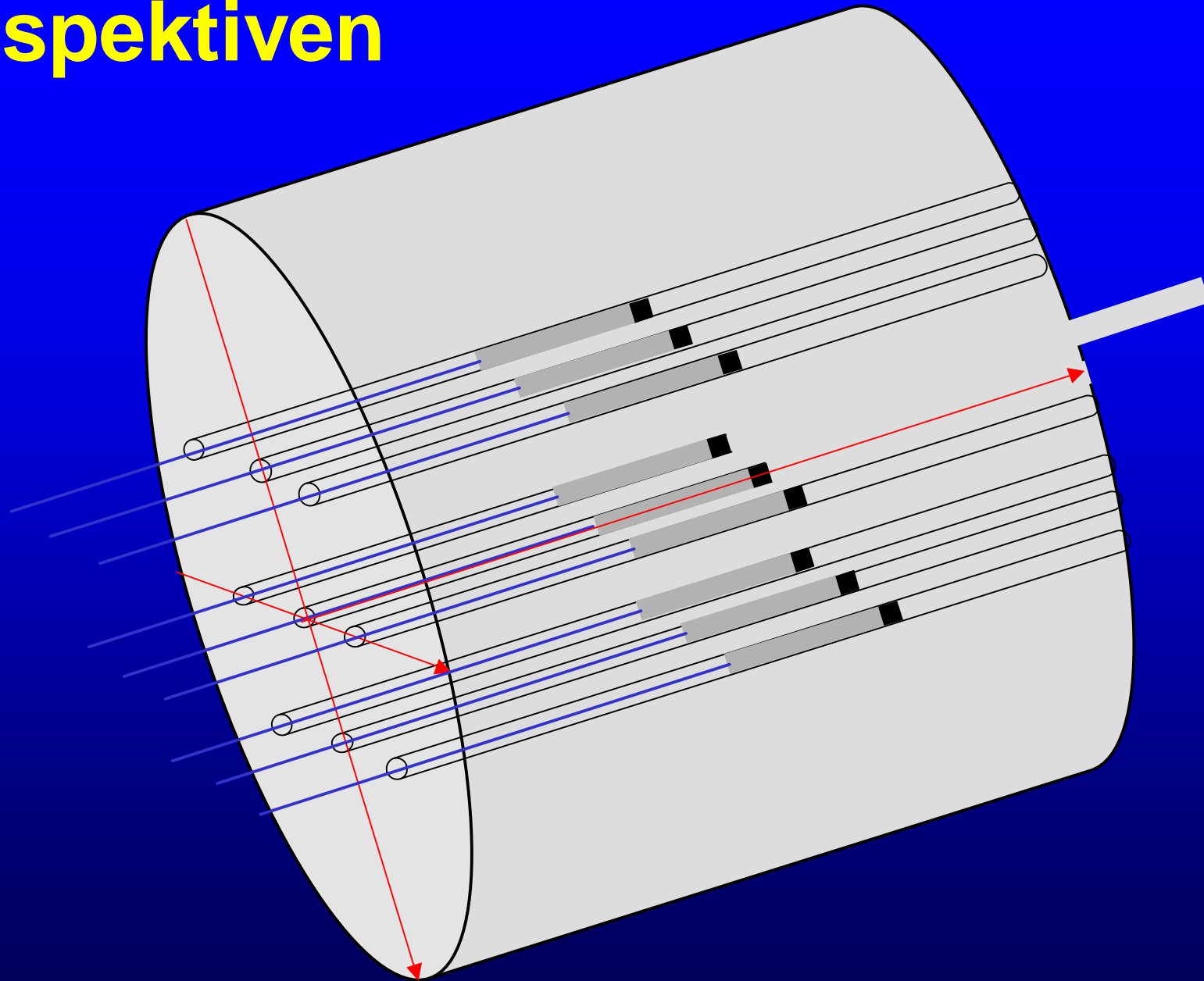
Perspektiven



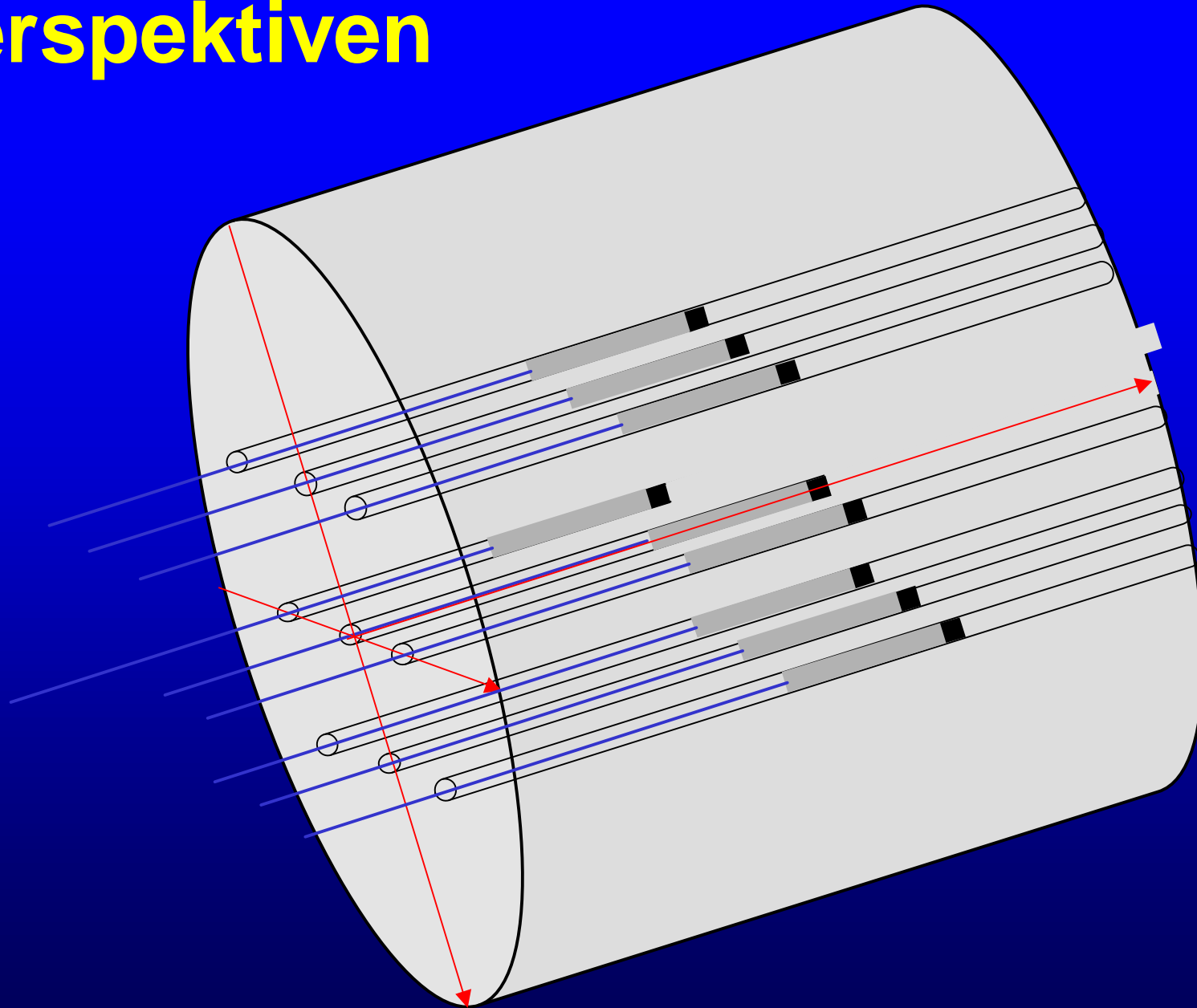
Perspektiven



Perspektiven

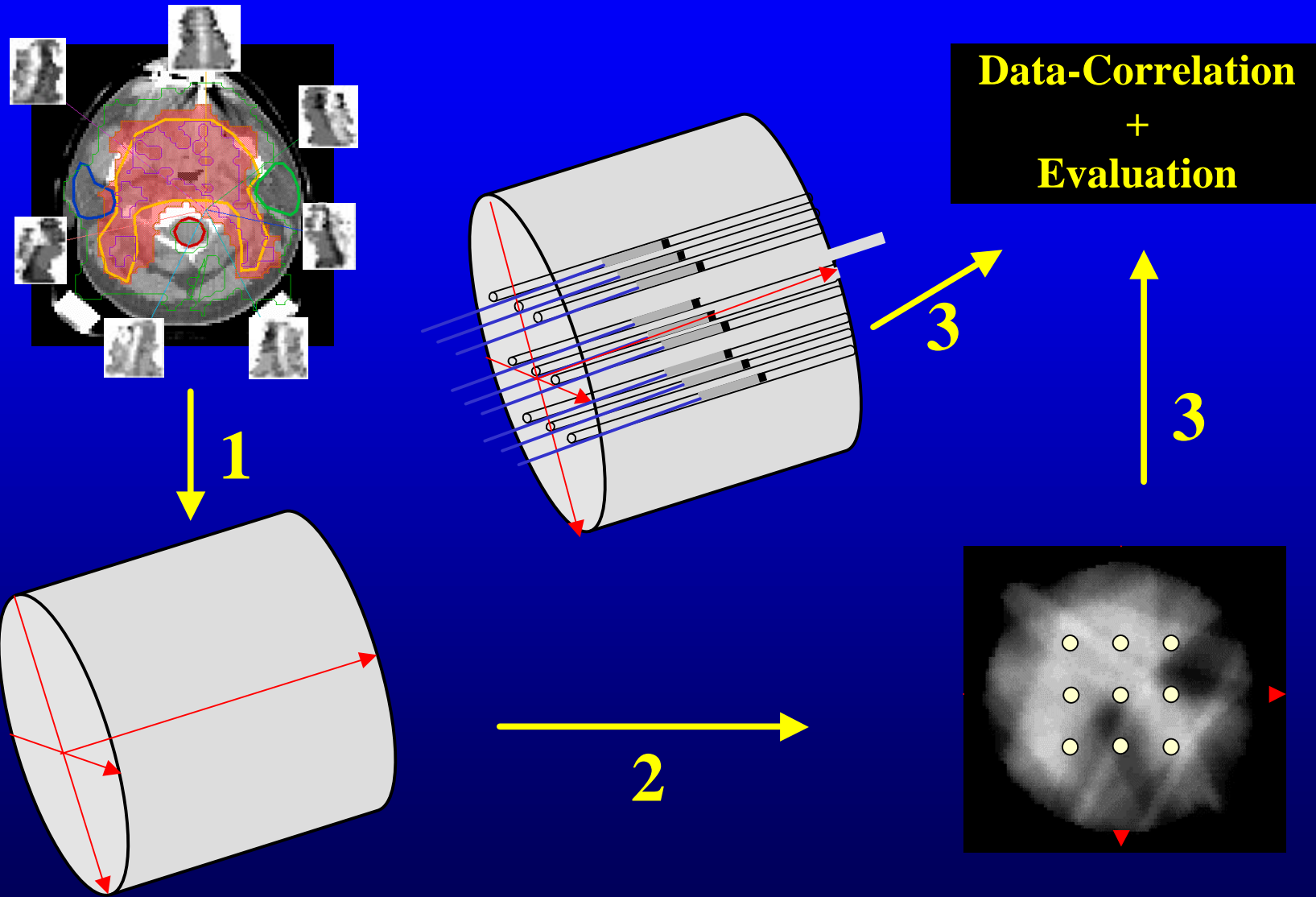


Perspektiven



Perspektiven

IK + aSi (Delivery)



IMRT Teaching Course

Heidelberg, 15-16 June 2002

organized by

MRC Systems GmbH Heidelberg

in collaboration

DKFZ Heidelberg

More informationen at:

www.imrt.de