

AbstractID: 4884 Title: Application of DAVID, a multi-wire ionisation chamber for in vivo-verification of IMRT and conformal dose distributions

Purpose:

In this work we present first clinical results obtained with the DAVID chamber.

Methods and Material:

The DAVID system (PTW Freiburg, Germany) is a flat, translucent multi-wire ionization chamber for daily *in-vivo* verification of IMRT beams. It is placed in the accessory holder of the linear accelerator. Each detection wire of the chamber is positioned exactly in the projection line of two opposing leafs of the MLC. The signal of each detection wire is proportional to the line integral of the ionization density along this wire, therefore it is directly proportional to the opening of the associated leaf pair. The number of measurement channels equals the number of leaf pairs. The sum of all wire signals is a measure of the dose-area product of the transmitted photon beam and of the total radiant energy administered to the patient.

Results:

After a successful dosimetric verification of an IMRT plan, the values measured by the DAVID system are stored as reference values. During daily treatment the signals are re-measured and compared to the reference values. In case of a deviation beyond a threshold a warning occurs. Because the DAVID system operates as an ionization chamber, disadvantages which might be observed in other devices, such as aging, are not to be expected. Furthermore, the influences on the beam characteristics are negligible.

Conclusion:

Clinical examples demonstrate that the DAVID system is a relevant tool to improve the reliability of IMRT treatments.

Conflict of interest: The DAVID system was developed in cooperation with PTW-Freiburg, Germany.