



# BRACHYTHERAPY

## In memory of Robert (Rob) van der Laarse (PhD) 1942 - 2020



Dear colleagues and friends,

With sadness we have learned that Rob van der Laarse died on 25 March, 2020. He was a husband, father, grandfather, physicist, programmer and a friend.

Rob started his professional career at The Netherlands Cancer Institute (NKI) in Amsterdam. During his study in the 1960s (physics at the University of Amsterdam) he became interested in the use of computers; hence he became one of the very early adopters of computers in physics. This experience was applied in radiotherapy at the NKI. In the early 1970s he was the only physicist working there. This fact probably inspired one of his famous wisecracks: "One physicist is no physicist", by which he stressed the importance of team collaboration. Nevertheless, his achievements were impressive; for example, in 1972 he produced some of the first computer-generated treatment plans. His early work was summarised in his PhD thesis, which was entitled Computerized radiation treatment planning. He successfully defended his thesis in February 1981.

Rob continued his career as a medical physicist at Nucletron from 1984. There, he created Nucletron's first multi-purpose treatment planning system, called the Nucletron Planning System (NPS). It supported high dose rate (HDR), pulsed dose rate (PDR) and low dose rate (LDR) brachytherapy for both manual and after-loading techniques, as well as external beam radiotherapy planning. At the time it was the most complete treatment planning system (TPS), for which Rob implemented state-of-the-art dose calculation for the time and even dose-optimisation algorithms and plan-evaluation tools. Rob van der Laarse was one of the inventors and promoters of the stepping source dosimetry system (SSDS) for HDR and PDR after-loading brachytherapy as extensions of the Paris system for LDR brachytherapy with iridium wires. SSDS offered more comprehensive optimisation capabilities for volume implants than earlier methods. Much later, software engineers continued to use Rob's algorithms for implementation in next generations of Nucletron brachytherapy TPSs with a modern user interface: Plato BPS 13 and 14, Oncentra Brachy.

He was author or co-author of more than 30 peer-reviewed publications. He wrote several chapters on plan optimisation and evaluation for brachytherapy textbooks. This included work on geometrical and dose-point optimisation. He also demonstrated the importance of dose-volume histograms (DVHs) in brachytherapy, especially showing a role of natural DVH and different dose-volume indices in the assessment of plan quality.

Rob van der Laarse was an excellent colleague to work with, always willing to explain the most complicated concepts and algorithms. Many Nucletron physicists, software developers, application specialists and users were grateful to him for his support, knowledge sharing, kindness, fascinating discussions and his searches for the best possible solutions.

Rob continued his work at an age when most people retire. He still inspired young physicists with his enthusiasm and sharp queries. His question “what makes a good brachytherapy plan?” inspired a full novel research line that involved artificial intelligence. In collaboration with Elekta and the Amsterdam University Medical Center (UMC), he developed enhanced geometrical optimisation (EGO) and Auto-EGO, providing a very good first step for interactive inverse planning (IIP). He continued to develop this software. During the last few years he collaborated closely with his good friend and retired medical physicist Kees Koedooder from the Amsterdam UMC.

For many years he was a member of the working group of the Groupe Européen de Curiethérapie - European Society for Radiotherapy and Oncology Brachytherapy Physics Quality assurance System (GEC-ESTRO BRAPHYQS). In this group he worked on several projects such as consensus data sets of TG-43 formalism, dose-to-water calibration for sources, and he provided much input on uncertainties in after-loading devices. He advocated Digital Imaging and Communications in Medicine (DICOM) connectivity between TPSs of different vendors and worked for this in a dedicated working group of the DICOM Standard Committee. The BRAPHYQS group also benefited from Rob’s vast knowledge of brachytherapy physics in other workpackages.

Until his last days, Rob van der Laarse worked on improvements to IIP, and he was very happy to have finished the job just in time. He demonstrated his final version of the planning software for a few of his former colleagues, who were impressed by his state of mind, positivity and willingness to share his achievements. That was the last opportunity for them to talk to him and to thank him for his involvement in their lives and professional careers, and their last farewell to Rob.

The brachytherapy community has lost a highly valued colleague and a friend to many of us. His work will continue to aid us in optimising treatments for our patients.

We miss you Rob.



**Yury Niatsetski**  
ELEKTA | Nucletron Operations BV  
Veenendaal, The Netherlands



**Arjan Bel**  
Department of Radiation Oncology  
Amsterdam UMC, The Netherlands



**Alex Rijnders**  
Europe Hospitals, Department of Radiotherapy  
Brussels, Belgium



**Frank-André Siebert, Chair of BRAPHYQS**  
UKSH, Clinic of Radiotherapy (Radiation Oncology)  
Kiel, Germany



**Down memory lane with Rob van der Laarse**



**Braphyqs-UroGEC meeting in London, 2008**



**Dinner at a Braphyqs meeting in Paris, 2012**





Dinner at a Braphyqs meeting in Paris, 2012



Braphyqs meeting in Kiel, 2015

