

Key and necessary modifications/enhancements have been made to the Nomos Peacock IMRT system, making possible an efficient and extremely accurate use of the system for the delivery of Intensity Modulated RadioSurgery (IMRS). The Nomos patient-positioning device originally marketed as the Crane™ has been re-designed to permit the precise delivery of obliquely oriented intensity modulated treatment arcs. A post collimation device has been developed to reduce the size of the pencil beams delivered by the system to levels necessary to radiosurgical applications. The Nomos Talon II invasive stereotactic immobilization system has been modified to provide the accuracy necessary to radiosurgical applications. Modifications include significant changes to the radiotherapy table adapter (RTA) and Nomogrip. A new class of objective function TARGET and TISSUE types, referred to by Nomos as *radiosurgery target* and *radiosurgery tissue*, respectively, have been developed in order to improve the rate of dose falloff for radiosurgical applications. The viability of the modified system as a radiosurgical tool has been evaluated with respect to the: smallest isodose volume treatable, accuracy of delivery via TG42 hidden target test, indices of conformity and homogeneity, and whole body dose received by the patient. The described modifications have resulted in significant improvements to both accuracy and conformity of delivered dose, and the evaluation of the viability of the modified system as a radiosurgical tool has yielded promising results. All modifications described are now commercially available from the manufacturer. *As inventor of the Crane II device Dr. Salter receives royalties for sales of the device.*