

Topic for project / master thesis in biophysics 2012/13

The Radiotherapy Department

St. Olavs Hospital

## **Accuracy in delivering of radiation therapy for gynecological malignances**

Both external radiation therapy and brachytherapy are used in radiation treatment of gynecological malignances. For both treatment forms accurate delivery of radiation is essential to give adequate doses to target volumes without exceeding tolerable doses to normal surrounding tissues.

I:

A challenge concerning external radiation is internal motions in the treatment area, and adequate radiation field sizes must include such movements. Internal motions of the uterus throughout the overall radiation time can be visualized via subsequent CT scans in women having an intrauterine spiral.

Individual radiation treatment plans, based on CT scans taken before treatment, can be transferred to the subsequent CT scans taken throughout the treatment course for visualizing the effects of internal motion on dose delivery. The project work will include such calculations for some patients, and further use the data to estimate suitable / optimal margins for similar radiation field sizes in the pelvic area.

II:

In brachytherapy of cervical cancer there are challenges in delineation of applicators, target volumes and volumes of organs at risk into the treatment planning system (MR based). The project work includes estimations of uncertainties in such delineations, and calculations on how this can influence on the dose delivery.

We offer project / master work for 1 student.

The given topic contains two parts. A project work will focus on one of these parts.

More detailed description of the topic will be given on request.

Contact persons:

Anne Beate Langeland Marthinsen ([anne.b.marthinsen@ntnu.no](mailto:anne.b.marthinsen@ntnu.no) / [anne.marthinsen@stolav.no](mailto:anne.marthinsen@stolav.no))

Signe Danielsen ([Signe.Danielsen@stolav.no](mailto:Signe.Danielsen@stolav.no))

Anne Dybdahl Wanderaas ([Anne.Dybdahl.Wanderas@stolav.no](mailto:Anne.Dybdahl.Wanderas@stolav.no))