

## **78. COMPUTERISED COLLIMATOR POSITIONING - DIAGNOSTIC RADIOGRAPHY (X- Ray)**

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A radiological examination is one of the most important diagnostic aids available in the medical practice. The main objective of this project is to bring the collimator movement to be controlled externally by PC from the X-ray room. This is mainly to prevent unnecessary exposure to the technician. Here we use a wireless camera to obtain images of the body parts to be exposed on the system with the help of camera image viewed from PC. The collimator position can be adjusted to the exact location from the computer, to deliver the X-rays. The Camera and Collimator are mounted on a linear guide, which are located exactly opposite to each other. There are two stepper motor, one is to control the movement of the linear guide in forward and backward and latter is for 180° rotation of the Camera – Collimator mounting. Using wireless camera the area to be exposed is captured and the image is viewed in the PC. Once we confirm that the camera is focusing the desired position, we will rotate the camera -collimator mounting to 180°. Now the collimator is in the exact position where the X – ray is to be exposed. After the exposure camera – collimator mounting will regain its original position. The positioning of linear guide and camera – collimator mounting is done with the help of PC. The stepper motor is controlled by pc using a user interface programmed by visual basic software. The user interface of PC has options for controlling various movements (one step forward, one step backward, continuous forward, continuous reverse, stop, rotate, X-ray On) of linear guide. The Micro controller ATMEL89C51 is programmed using KEIL C. Since it is Flash memory it can be reprogrammed at any time. The input to Micro controller is given through PC which gives the information about the direction of linear guide and collimator – camera mounting. The control signals from the Micro controller will drive the stepper motors. Thus the control is done externally and the technician is protected from being exposed to X-rays.