

EFFECTS OF X-RAY TUBE AND DETECTOR ON
CT AND DIGITAL RADIOGRAPHY RESOLUTION

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In both computed tomography and digital radiography the resolution is effected by the focal spot size and the target angle of the x-ray tube, by the detector width and by the filter of computer processing. The resolution will vary with position.

By analysis we have computed the point spread function at different points and plotted contours of constant FWHM for various values of the parameters. The transform of the point spread function is calculated as the product of the transforms of the detector, the focal spot (as seen and geometrically magnified from each point) and the processing filter.

The results show the position of optimum resolution. Due to the effect of target angle, the resolution degrades as one moves off the central axis of the x-ray beam. The figures below illustrate the dependence of resolution on focal spot size and target angle.

