There is growing interest in techniques based on using detector arrays in confocal microscopy [1]. Many different implementations have been proposed, and various different names given to these techniques, one such name being image scanning microscopy [2]. The images from the elements of the detector array can be combined optically [3], but more flexibility is achieved by recording each image independently for subsequent processing. This can result in a substantial improvement in overall image quality, with a combination of resolution improvement and signal strength. The image is reconstructed by pixel reassignment, in which the pixel value is reassigned to the appropriate object coordinates, which vary for different points of the array. Alternatively, the data set consisting of images from different detector pixels can be deconvolved using the known theoretical point spread function as a priori information.

In order to maintain the optical sectioning property of the confocal microscope, the size of the detector array should be limited to a region with a size of the order of the central lobe of the focused Airy disc. Thus only a small number of detector elements are actually necessary, a quadrant of four detector elements being a good design.

**REFERENCES:**