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## Investigating X-ray detector systems using Monte Carlo techniques

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Digital Tomosynthesis (DT) is a 3D mode of x-ray imaging. Adaptix Ltd have developed a novel mobile DT device enabled by implementing an array of R-ray emission points and a flat-panel detector. This device gives access to human and animal 3D imaging, as well as to non-destructive material evaluation. DT is not as clinically popular as Computed Tomography (CT) or radiography, and flat-panel source DT even less so, thus creating scope to investigate the optimal flat-panel detector technology for this modality. Geant4, a Monte Carlo Particle Transport code, has been used to simulate the Adaptix Ltd system to do this. Parameters such as the material composition of the detectors, the exact detection method and the inclusion vs exclusion of a scintillation layer are tested in this simulation environment. This work aims to find the optimal flat-panel detector design by comparing different scintillator compositions and structures for this DT method. Therefore, the ideal detector that preserves the advantages of this low-cost, low-dose scanning approach is determined.

### Footnotes

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