

## AbstractID: 14081 Title: Impact of varying the number of projection images used in digital tomosynthesis on the effective slice thickness of the tomograms

**Purpose:** To investigate the effect of changing the number of projections within set tomosynthesis angles on the final effective slice thickness of the reconstructed tomograms.

**Method and Materials:** For several tomosynthesis angles, varying numbers of images were sampled from a set of projections of a phantom acquired for CT reconstruction. These images were used with the simultaneous algebraic reconstruction technique to reconstruct digital tomosynthesis tomograms with a slice thickness of 5 mm. For each dataset, the effective slice thickness was determined and compared to the known slice thickness of tomograms reconstructed using all the images (basically a CT reconstruction).

**Results:** As expected, the effective slice thickness decreased with decreasing tomosynthesis angle, being almost three times the value of a CT-reconstructed slice when the tomosynthesis angle was 10 degrees. However, when the tomosynthesis angle was kept constant, the effective slice thickness did not vary much.

**Conclusion:** Since the out-of-plane spatial resolution seems to depend only on the tomosynthesis angle, this opens up the option of using fewer projections for digital tomosynthesis. This approach would be beneficial since it would decrease the patient's imaging dose.