

The influence of phantom diameter on X-ray CT dose evaluation using radiochromic film

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Introduction

- We have tried to establish the simple and accurate CT dosimetry method using radiochromic film (RCF).
- In this study, we investigated how the phantom diameter affects the density distribution of RCF.

Methods

- X-ray was exposed by a clinical scanner. (120 kV, 300mA, 2 cm thickness, 1 sec/rotation).
- Gafchromic XR-QA2 film was used in RCF.
- Two different size acrylic semicylinder phantom was used. (cross section diameter was 10 cm & 16 cm)

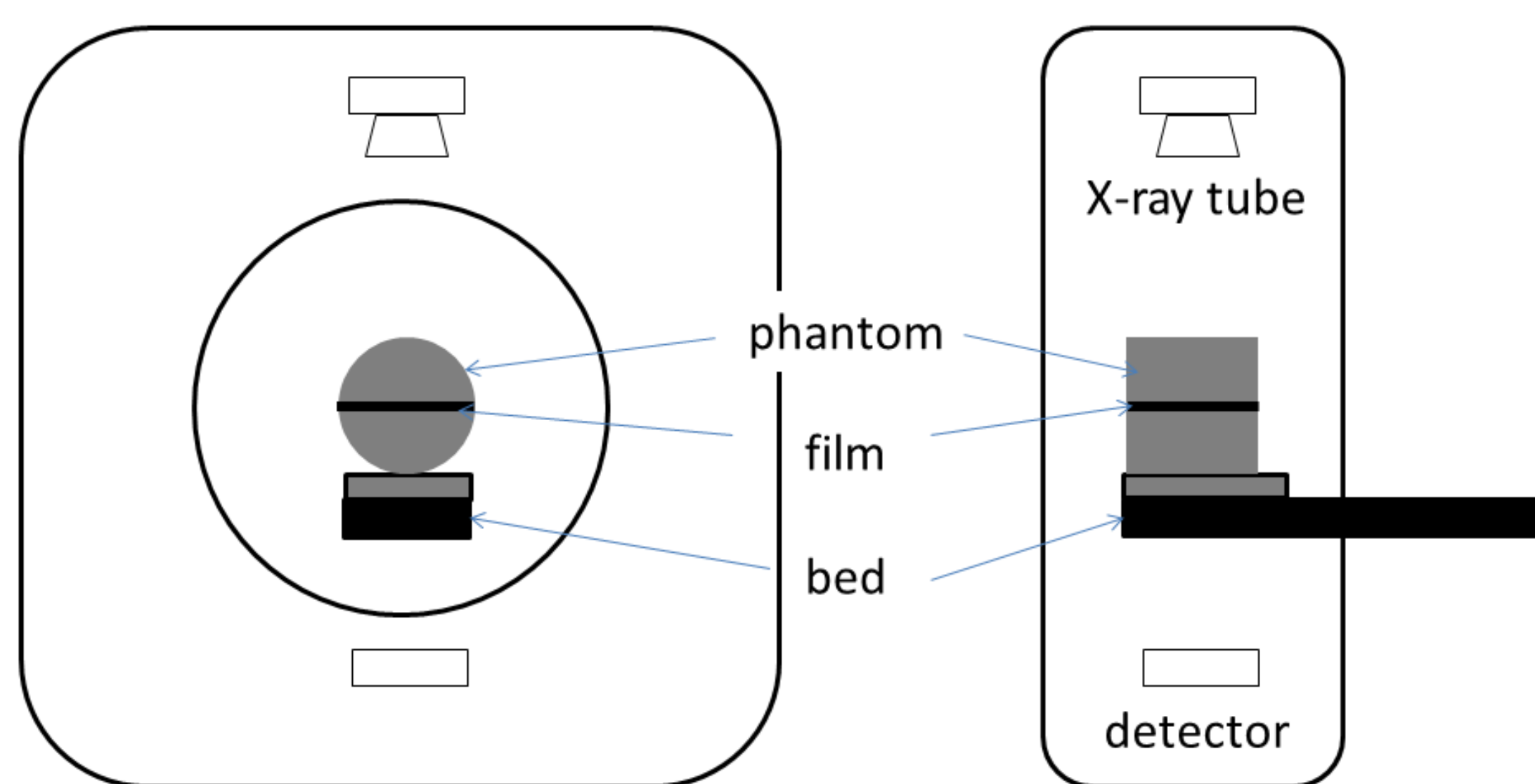


Fig. 1 Experimental setup

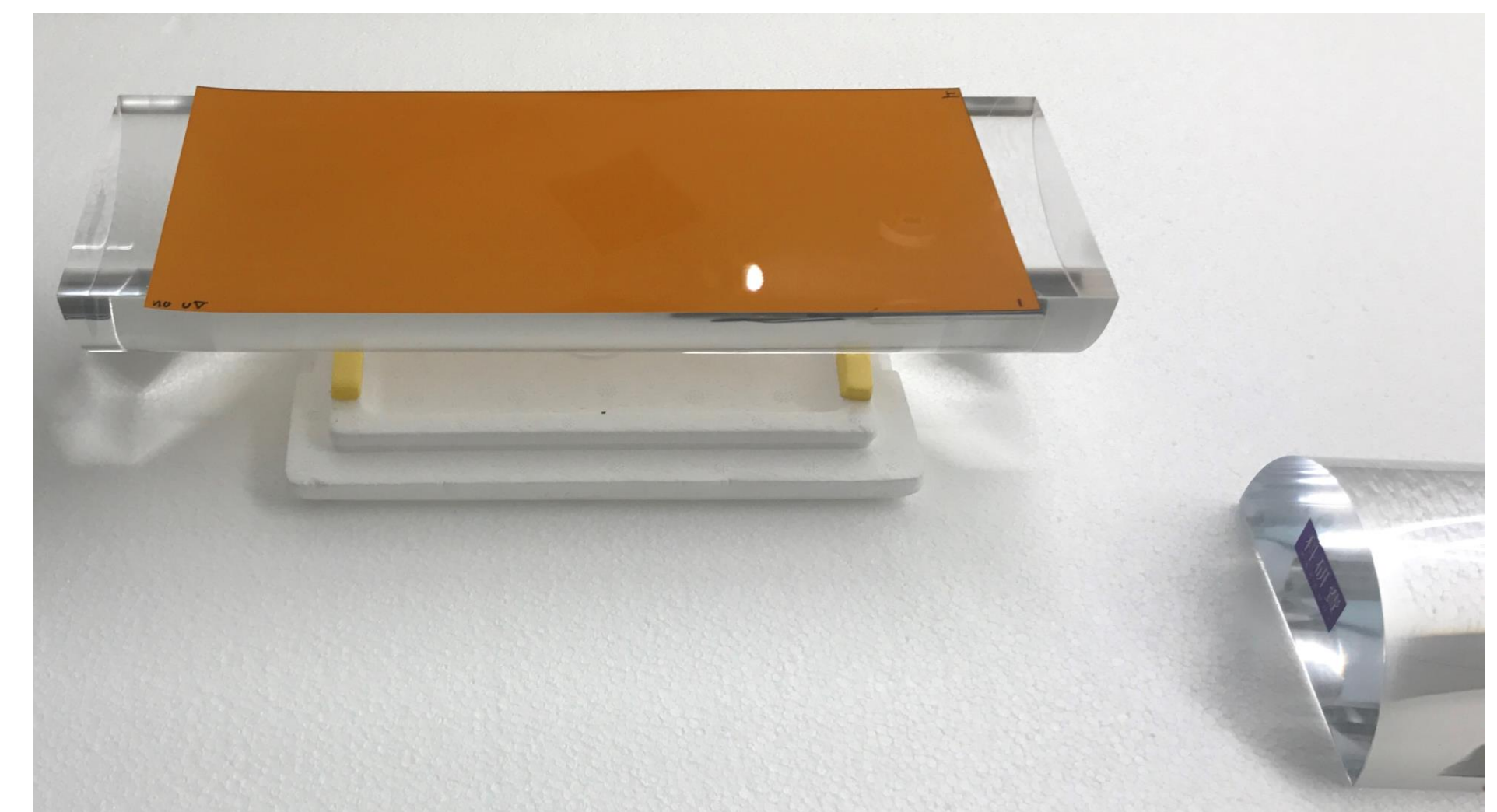


Fig. 2 Acrylic phantom (10 cm Φ) with unexposed film

Results

To compare the density distribution, we visualized two dimensional relative dose map by the contour line analysis. We can observe the distribution of each exposure condition easily.

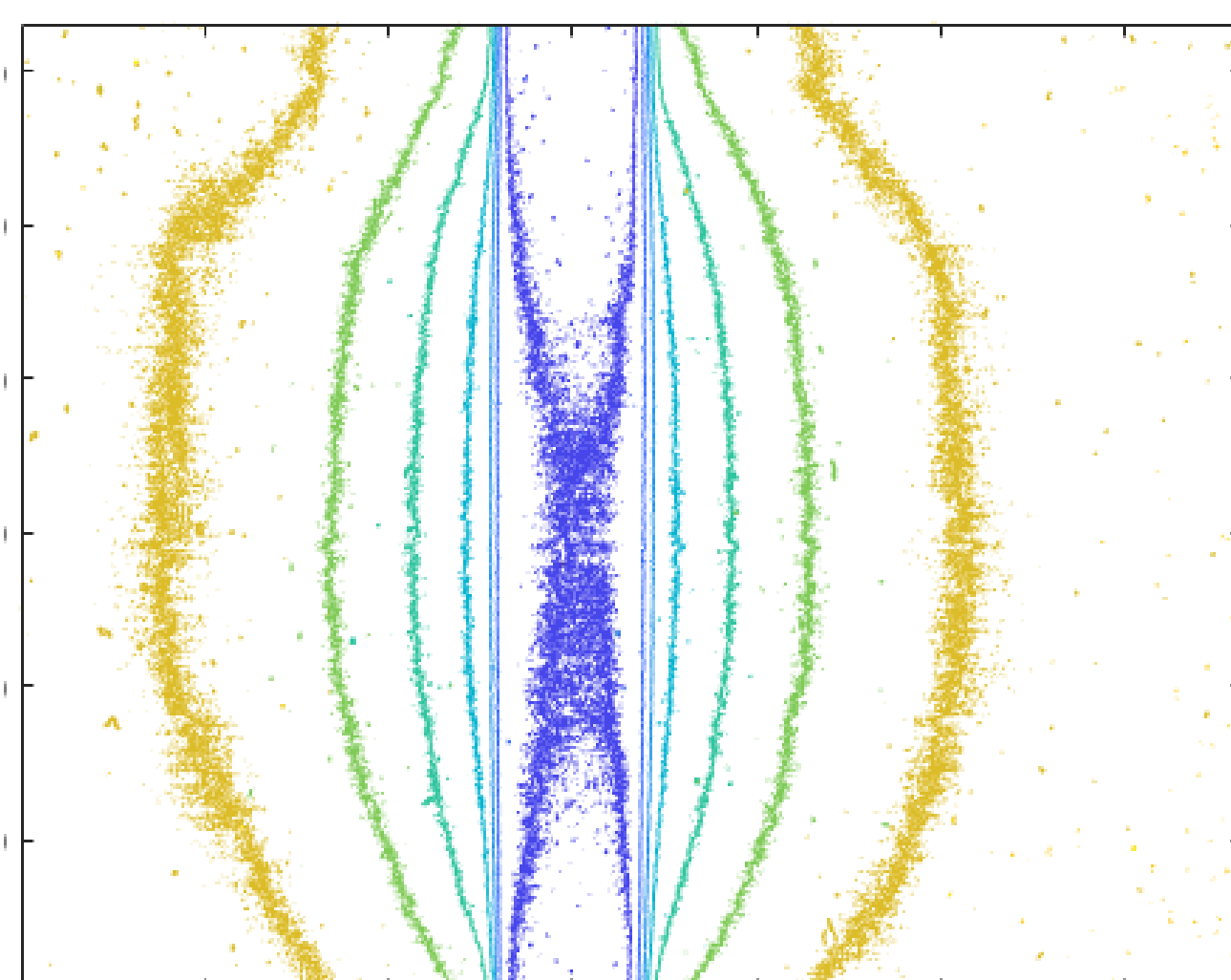


Fig. 3 The contour map (10 cm Φ , exposure time: 1 sec)

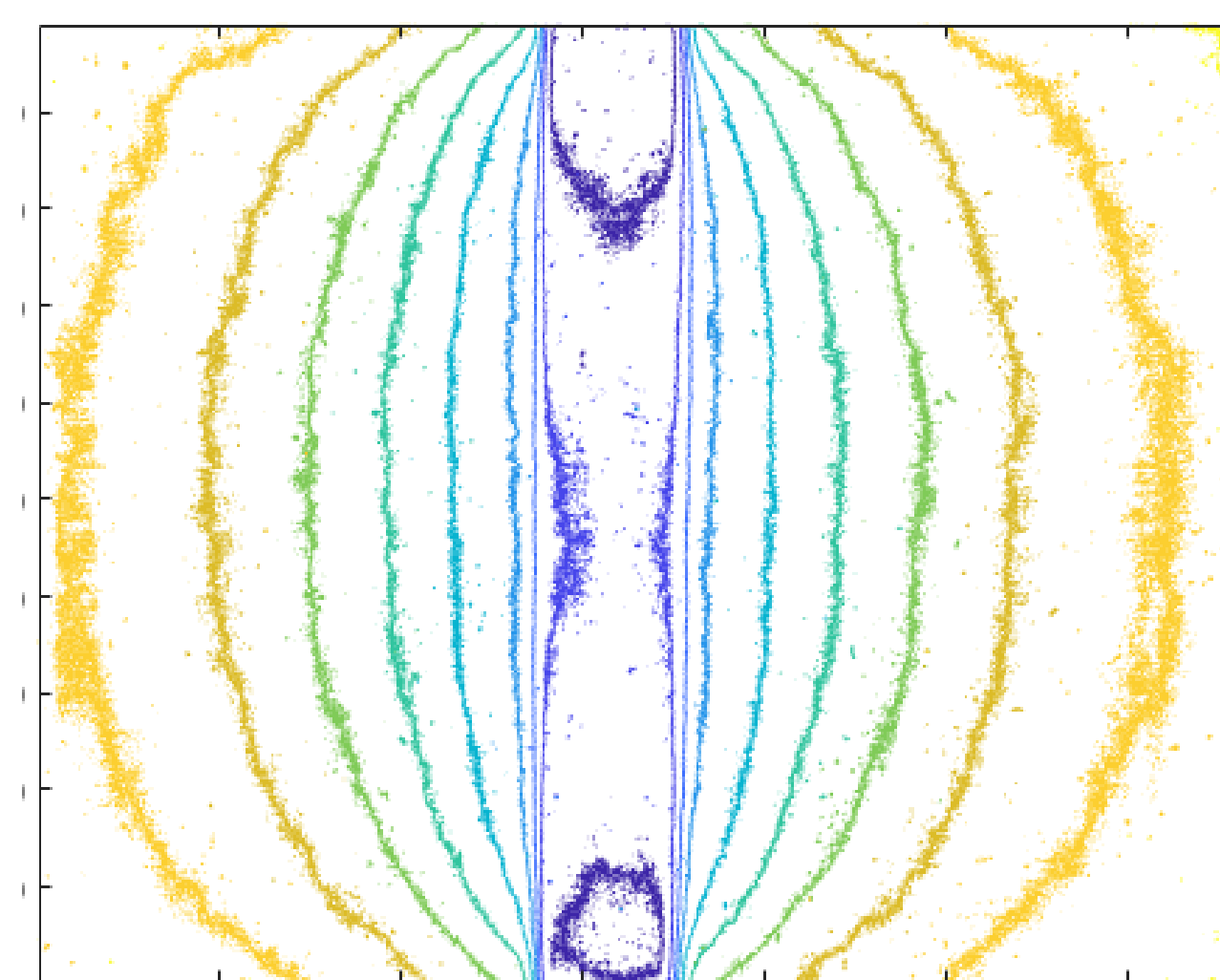


Fig. 4 The contour map (16 cm Φ , exposure time: 2 sec)

Conclusion

- The contour line analysis may be useful for observation of relative dose distribution by RCF.
- Further investigation is necessary for accurate quantitative dosimetry using RCF.

Acknowledgements

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