Requirements for submission:

- Abstracts will only be accepted using the electronic submission process (indico), email submission will not be accepted.
- Abstracts must not exceed 250 words
- No images to be included in abstract
- There is no limit to the number of abstracts that an individual can submit
- Once you have submitted your abstract, you will receive an automated submission successful email to all primary and co-authors
- The use of abbreviations and acronyms should be kept to a minimum
- Selected oral presenters may pre-record their presentations with a requirement they are available for the question and answer portion at the end of their presentation
- All accepted orals and posters presentations will be required to register to attend
- Posters to be supplied as a MP4 with a voice over no longer than 3 minutes
- Poster slam entries to be provided as a MP4 with a voice over no longer than 1 minute
- All presenters will be required to provide their photo and bio via the link provided in the accepted notice
- Abstracts must be submitted by **11:59pm (AEST), 17 September 2021** for consideration by the Program Committee

Tomographic Phase-Extraction from a Weakly Attenuating Arbitrary Object

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Propagation-based phase-contrast X-ray imaging (PB-PCXI) is an imaging technique suitable for imaging weakly-attenuating objects, e.g., biological samples, as it utilizes both attenuation and refraction effects. Such effects are material dependent, and are described by the X-rays complex refractive index, given as $n = 1 - \delta + i\beta$, where β and δ describe attenuation, and refraction, respectively. Phase retrieval algorithms are typically applied to PB-PCXI images to recover lost phase information. A single-material reconstruction, based on the transport of intensity equation, has been published by Paganin *et al.* [1] and has proven useful in a variety of applications. This approach has been extended to consider the cases of multi-material objects [2], and partially coherent X-ray sources [3]. The described phase-retrieval algorithms can successfully recover the projected-phase information of an object, however it requires *a priori* sample knowledge. We present an algorithm capable of extracting β and δ functions for an arbitrary sample that is composed of several materials. The essence of the approach is based on curve-fitting an error-function to each interface between distinct materials in a computed tomographic reconstruction [4], where the fit parameters are then used to calculate δ and β for composite materials. This approach requires no *a priori* sample information, making it broadly applicable, particularly in cases where exact sample composition is not known. We have applied this method to a breast tissue sample, where the delta component of the complex refractive index for composite materials was calculated to 1.1% - 2.5% accuracy, compared to theoretical values.

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