Silicon pore optics for high-energy optical systems

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Stellingen

Behorend bij het proefschrift "Silicon pore optics for high-energy optical systems".

I. Optimizing optical performance without considering mechanical robustness is to no purpose when designing a space-borne telescope.
Chapter 2 of this thesis.

II. It would be unavailing to fly the focusing optics of high-energy telescopes such as Athena without thin film metallic coatings.
Chapter 2 and 3 of this thesis.

III. As the use of magnetic resonance imaging increases, tumors will be detected at earlier stages, making Laue lenses well-suited tools to treat them.
Chapter 4 of this thesis.

IV. Satellite formation flying will eventually open a new era for space-borne gamma-ray telescopes.
Chapter 4 of this thesis.

V. Building upon the conclusions of Vacanti, understanding statistical errors of the encircled energy fraction and its quantiles, notably the half-energy width, is critical to reducing the characterization time of the individual imaging elements of large segmented missions like Athena.
*G. Vacanti, Applied Optics **54**, 10619-10622 (2015).*

VI. The conclusion of Massahi et al. that atmospheric contamination can deteriorate thin films is correct, but organic contamination of silicon pore optics surfaces could lead to better optical performance.
*S. Massahi et al., Applied Optics **59**, 10902-10911 (2020).*

VII. The surprisingly high dose rate presented by Paternò et al. is due to an erroneous treatment of diffraction in crystals when the source is placed at finite distance.
*G. Paternò et al., Journal of Applied Crystallography **49**, 468 (2016).*

VIII. Curved crystals allowing the concentration of radiation in both radial and azimuthal directions would lead to much better focusing properties than the individual single crystals presented by Wade et al.
*C. Wade et al., Nuclear Instruments and Methods in Physics Research Section A **895**, 135 (2018).*

IX. Pursuing a PhD while working in a company is a Buridan's ass dilemma.

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