

144. Title: Experience with low-alpha lattices at the Diamond Light Source

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Abstract: In this paper we present the experience at Diamond Light Source in the design, implementation, and operation of low momentum compaction factor lattices for the generation of short x-ray pulses and coherent THz radiation. The effects of higher-order terms in the expansion of the momentum compaction factor on beam dynamics are reviewed from a theoretical point of view, and the details of both high-and low-emittance solutions at Diamond are discussed. Measurements taken to characterize the lattices under a variety of machine conditions are presented, along with the practical limitations that exist as the momentum compaction factor is made to approach zero.