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## RECONSTRUCTION OF SKY ILLUMINATION DOMES FROM GROUND-BASED PANORAMAS

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**Abstract.** The knowledge of the sky illumination is important for radiometric corrections and for computer graphics applications such as relighting or augmented reality. We propose an approach to compute environment maps, representing the sky radiance, from a set of ground-based images acquired by a panoramic acquisition system, for instance a mobile-mapping system. These images can be affected by important radiometric artifacts, such as bloom or overexposure. A Perez radiance model is estimated with the blue sky pixels of the images, and used to compute additive corrections in order to reduce these radiometric artifacts. The sky pixels are then aggregated in an environment map, which still suffers from discontinuities on stitching edges. The influence of the quality of estimated sky radiance on the simulated light signal is measured quantitatively on a simple synthetic urban scene; in our case, the maximal error for the total sensor radiance is about 10%.

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