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Wave-front engineering by Huygens-Fresnel principle for nonlinear optical interactions in domain engineered structures ZHU YONGYUAN, Nanjing University — The wave-front engineering for nonlinear optical interactions was discussed. Using Huygens-Fresnel principle we developed a general theory and technique for domain engineering with conventional quasi-phase-matching (QPM) structures being the special cases. We put forward the concept of local QPM, which suggests that the QPM is fulfilled only locally not globally. Experiments agreed well with the theoretical prediction. The proposed scheme integrates three optical functions: generating, focusing and beam splitting of second-harmonic wave, thus making the device more compact. This work was supported by the State Key Program for Basic Research of China (Grant No. 2004CB619003) and also by the NNSF of China (Grant Nos.10523001, 10504013 and 10674065).

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