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Wave-Front Engineering by Huygens-Fresnel Principle for Non-linear Optical Interactions in Domain Engineered Structures¹ ZHU YONGYUAN, QIN YIQIANG, ZHANG CHAO, Nanjing University — 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.

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