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Convolutions of univalent harmonic strip mappings.

Let $f_k = h_k + \overline{g_k}$ be the family of harmonic univalent functions with $h_k(z) + g_k(z) = \frac{z}{1-z}$ for $k = 1, 2$. Earlier it was shown that if $f_1 * f_2$ is locally univalent and sense-preserving, then $f_1 * f_2$ is univalent and convex in the direction of the real axis. This resulted in several papers determining condition under which $f_1 * f_2$ is locally univalent and sense-preserving. In this paper we consider the family of harmonic univalent functions $f_k = h_k + \overline{g_k}$ (where $k = 1, 2$) that are shears of the analytic map $h_k - g_k = \frac{1}{2} \ln \left(\frac{1+z}{1-z} \right)$ with dilatation $\omega_k = e^{i\theta_k} z^k$. We prove that if the convolution $f_1 * f_2$ is locally one-to-one and sense-preserving, then $f_1 * f_2$ is univalent and convex in the direction of the real axis. (Received September 14, 2017)