We introduce a procedure to fold a crystal $B$ of simply-laced Cartan type $C$ by the action of an automorphism $\sigma$, which produces a crystal $B_{\sigma}$ for the folded Langlands dual datum $C^{\sigma\vee}$. This construction preserves normality and the Weyl group action, and is compatible with Kashiwara’s tensor product rule.

Combinatorial properties of the folding of $B(\infty)$ reflect the structure of subalgebra of the quantum group $U_q^{-}(C)$. In particular, this subalgebra admits a $U_q^{-}(C^{\sigma\vee})$-module structure via Berenstein and Greenstein’s machinery of quantum folding, which is encoded by the $C^{\sigma\vee}$-crystal structure of $B(\infty)_{\sigma}$. We find that $B(\infty)_{\sigma}$ is generated by a set of highest-weight elements over the monoid of lowering operators. The highest-weight set of $B(\infty)_{\sigma}$ identifies with a monoid admitting a unique finite $\subset$-minimal generating set, in finite type, and a subset of the Weyl group called the balanced parabolic quotient is in one-to-one correspondence with this generating set in type $D$. (Received September 19, 2016)