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Let  $\mathcal{P}$  and  $\mathcal{Q}$  be polytopes in  $\mathbb{Q}^n$  whose affine spans intersect at a single rational point in  $\mathcal{P} \cap \mathcal{Q}$ , and let  $\mathcal{P} \oplus \mathcal{Q} = \text{conv}(\mathcal{P} \cup \mathcal{Q})$ . We give formulas for the generating function

$$\sigma_{\text{cone}(\mathcal{P} \oplus \mathcal{Q})}(z_1, \dots, z_n, z_{n+1}) = \sum_{(m_1, \dots, m_n) \in t(\mathcal{P} \oplus \mathcal{Q}) \cap \mathbb{Z}^n} z_1^{m_1} \cdots z_n^{m_n} z_{n+1}^t$$

of lattice points in all integer dilates of  $\mathcal{P} \oplus \mathcal{Q}$  in terms of  $\sigma_{\text{cone} \mathcal{P}}$  and  $\sigma_{\text{cone} \mathcal{Q}}$ , under various conditions on  $\mathcal{P}$  and  $\mathcal{Q}$ . This work is motivated by (and recovers) a product formula of B. Braun for the Ehrhart series of  $\mathcal{P} \oplus \mathcal{Q}$  in the case where  $\mathcal{P}$  and  $\mathcal{Q}$  are lattice polytopes containing the origin, one of which is reflexive. In particular, we find necessary and sufficient conditions for Braun's formula and its multivariate analogue. (Received September 03, 2014)