

Letterplace ideals from posets: A large class with unusually
nice properties

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To any poset P and natural number n we associate a monomial ideal $L(n, P)$, called a letterplace ideal, in the polynomial ring $k[x_{p,i}]_{p \in P, 1 \leq i \leq n}$. Its Alexander dual ideal $L(P, n)$, we call a co-letterplace ideal.

More generally any poset ideal $\mathcal{I} \subseteq \text{Hom}(P, [n])$ (the codomain is the totally ordered set on n elements), gives rise to an ideal $L(\mathcal{I}) \subseteq L(P, n)$ and the Alexander dual $L(\mathcal{I})^A \supseteq L(n, P)$.

We inform on the omnipresence of these ideals, their resolutions, deformations, and how they give rise to a class of triangulations of spheres comprehensively generalizing Bier spheres.