THE AMPLE CONE OF A K3 SURFACE

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ABSTRACT

For a projective surface $X$, the cone of positive square elements in the Néron-Severi group $\text{NS}(X)_\mathbb{R}$ has two connected components $C^+$ and $-C^+$. The ample cone $\text{Amp}(X)$ is the collection of all finite linear combinations of ample line bundles with nonnegative real coefficients in $\text{NS}(X)_\mathbb{R}$, and it sits inside of $C^+$. I will explain in this talk what the ample cone looks like when $X$ is a K3 surface. In this case, there is a nice description of $\text{Amp}(X)$ in terms of a discrete group called the Weyl group $W$. This group is generated by the reflections associated with the classes of $(-2)$-curves in the K3 surface. Moreover, when $X$ is a K3 surface, the Weyl group acts on the positive cone with fundamental domain equal to the closure of $\text{Amp}(X)$. 