CONCERNING GROTHENDIECK'S PERIOD CONJECTURE FOR
CODIMENSION 1 CYCLES

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Grothendieck's Period Conjecture for codimension 1 cycles asserts that, for any smooth projective variety X over the algebraic closure $\overline{\mathbf{Q}}$ of $\mathbf{Q}$ in $\mathbf{C}$, a class α in the cohomology $H^2(X_{\mathbf{C}}, \mathbf{Z})$ of the associated complex projective variety $X_{\mathbf{C}}$ is the cohomology class of a divisor in X iff the class $2\pi i \alpha$ in $H^2(X_{\mathbf{C}}, \mathbf{C})$ belongs to the $\overline{\mathbf{Q}}$-vector subspace $H^2_{dR}(X/\overline{\mathbf{Q}})$ defined by the algebraic de Rham cohomology of X.

This talk will discuss some results and problems related to this conjecture.