Contribution ID: **8** Type: **not specified**

Generalized Cross-Ratios

Tuesday, 4 June 2024 16:00 (1 hour)

For P smooth projective variety of dim. n over $\mathbb{C}$ complex numbers; $Y = Y_1 - Y_2$codim r algebraic cycle, $Z = Z_1 - Z_2$ dim $r-1$ algebraic cycle, Y, Z disjoint support and homologous to 0. Biextension $\mathsf{B} := H^{2r-1}(\mathsf{P} \; smallsetminus Y, Z; \mathbb{Q}(r))$ mixed $\mathbb{Q}_{HS}$ with weights 0,-1,-2 and weight graded $W_{-2}\mathsf{B} = \mathbb{Q}(1)$, $gr^W_{-1}\mathsf{B} = H^{2r-1}(\mathsf{P}, \mathbb{Q}(r))$, and $gr^W_0 = \mathbb{Q}(0)$. Degenerate case $gr^W_{-1}\mathsf{B} = (0)$ yields a Kummer extension $0 \to \mathbb{Z}(1) \to \mathsf{B} \to \mathbb{Z}(0) \to 0$. Such a Kummer extension carries a generalized cross-ratio $\lambda(\mathsf{B}) \in \mathbb{C}^*$. Examples and conjectures about generalized cross-ratios will be discussed.

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