Abstract and concrete clones:

Clones arise naturally in universal algebra as the collection of *term operations* $W_\tau(X)^{\mathcal{A}}$ of algebras $\mathcal{A}$. For example $x*y*z^{-1}$ may denote a term in the variety of groups and so describes a map in any group $G^3 \to G; (x, y, z) \mapsto x * y * z^{-1}$. We can superpose these maps so that if s is an n-ary map and t_i for $i = 1, 2, ..., n$ are m-ary maps then we can define a new m-ary map $S^n_m(s, t_1, ..., t_n)$ in which $(a_1, ..., a_m) \mapsto s(t_1(\vec{a}), ..., t_n(\vec{a}))$. These are instances of *concrete clones*.

On the other hand we can define a heterogeneous algebra type τ_0 and choose identities in this language so as to arrive at the equational class K_0 which captures the structure of the concrete clones above hence *abstract clones*.

I wish to cover the following for this talk; (1) term clones and free algebras in the variety of clones, (2) clones and relations - the Inv/Pol Galois connection, (3) Rosenberg's characterization of maximal clones, (4) definitional equivalence of varieties and the clone $\mathfrak{A}(\mathcal{V})$, (5) clone identities and hyperidentities.