MIGUEL CAMPERCHOLI, Dominions in filtral quasivarieties.
Facultad de Matemática, Astronomía, Física y Computación, Universidad Nacional de Córdoba, Argentina.
E-mail: camper@famaf.unc.edu.ar.

Let $A \leq B$ be structures, and $K$ a class of structures. An element $b \in B$ is dominated by $A$ relative to $K$ if for all $C \in K$ and all homomorphisms $g, g' : B \to C$ such that $g$ and $g'$ agree on $A$, we have $gb = g'b$. Write $D_{01}$ for the class of bounded distributive lattices, let $B := 2 \times 2$, and let $A$ be the sublattice of $B$ with universe $\{\langle 0, 0 \rangle, \langle 0, 1 \rangle, \langle 1, 1 \rangle\}$. As 01-lattice homomorphisms map pairs of complemented elements to pairs of complemented elements, and every element in a distributive lattice has at most one complement, it follows that $\langle 1, 0 \rangle \in \text{dom}_{B}^{A}$. The key element to take away from this argument is that $\langle 1, 0 \rangle$ is generated by $A$ if we add the complementation operation to $B$. Since this (partial) operation is defined in every member of $D_{01}$ by the conjunction of atomic formulas
\[ \varphi(x, y) := x \land y = 0 \& x \lor y = 1, \]
it is preserved by all relevant maps. This situation generalizes as follows. Recall that a class of algebraic structures is a quasivariety provided it is axiomatizable and closed under direct products and substructures. A quasivariety $Q$ is filtral if it is semisimple, its class of simple members is universal, and it is congruence distributive. For instance, $D_{01}$ is a filtral quasivariety. In our talk we shall discuss the following result and some applications.

**Theorem.** Let $Q$ be a filtral quasivariety and let $M$ be its class of simple members. Suppose $M$ has the amalgamation property and $M_{ec}$ (the class of existentially closed members in $M$) is axiomatizable. For all $A, B \in Q$ such that $A \leq B$ and all $b \in B$ the following are equivalent:

1. $b \in \text{dom}_{B}^{A}$
2. There are a conjunction of atomic formulas $\delta(\bar{x}, y)$ and $\bar{a} \in A$ such that:
   - $\delta(\bar{x}, y)$ defines a function in $Q$
   - $B \models \delta(\bar{a}, b)$
   - $M_{ec} \models \forall \bar{x} \exists y \delta(\bar{x}, y)$. 

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[Note: The above text is a concise version of the original document, focusing on the key definitions and results related to dominions in filtral quasivarieties.]