The model companion of the class of pseudocomplemented semilattices is finitely axiomatizable.

For a class $K$ of algebras $A(K)$ and $E(K)$ denote its algebraically and existentially closed members. Besides (semantically) determining its members the question whether these classes can be finitely axiomatized is of interest.

In this talk we investigate $\text{PCS}$, the class of pseudocomplemented semilattices (pcs), in this respect. We will first show how a finite axiomatization of $A(\text{PCS})$ can be obtained using the property: A pcs $P$ is algebraically closed iff every finite subpcs of $P$ can be extended within $P$ to $2^r \times (\hat{A})^s$, $2$ being the two element Boolean algebra, $\hat{A}$ the countable atomless Boolean algebra with a new top element. This extendability property is described with finitely many first-order sentences.

We will then narrow down existential closedness of a pcs $P$ assuming $P$ is already algebraically closed. A description of this characterization with finitely many formulas together with the above finite axiomatization of $A(\text{PCS})$ gives us the finite axiomatization of $E(\text{PCS})$. (Received November 07, 2011)