Tom Richmond* (tom.richmond@wku.edu). Complementation in the Lattice of Locally Convex Topologies.

We find all locally convex homogeneous topologies on \((\mathbb{R}, \leq)\) and determine which of these have locally convex complements. Among the locally convex topologies on a \(n\)-point totally ordered set, each has a locally convex complement, and at least \(n\) of them have \(2^{n-1}\) locally convex complements. For any infinite cardinal \(\kappa\), totally ordered spaces of cardinality \(\kappa\) which have exactly 1, exactly \(\kappa\), and exactly \(2^{\kappa}\) locally convex complements are exhibited. (Received January 18, 2011)