SHORTER NOTES

The purpose of this department is to publish very short papers of an unusually elegant and polished character, for which there is no other outlet.

THE CENTER OF A COMPLETE RELATIVELY COMPLEMENTED LATTICE IS A COMPLETE SUBLATTICE

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1. Introduction. The purpose of this note is to prove the assertion of its title. The notion of the center of a continuous geometry was introduced by J. von Neumann [7, p. 240] who established the fact that the center of such a lattice is a complete sublattice. It is well known [1, p. 27] that the center of any lattice with 0 and 1 is a Boolean sublattice, but it is not known if the center of a complete lattice must be a complete sublattice. Several authors have, however, established this result for various classes of relatively complemented lattices. Specifically, Kaplansky [5, Theorem 5, p. 558] proved it for complemented modular lattices, Foulis [2, Lemma 3, p. 67] as well as Holland [4, p. 72] for orthomodular lattices, and S. Maeda [6, Theorem 3, p. 158] verified it for a relatively semi-orthocomplemented lattice. Our theorem will include all of the above results as special cases.

2. Proof of the theorem. The author wishes to thank the referee for suggesting the following proof. Let $L$ be a complete relatively complemented lattice, and let $\{Z_i: i \in I\}$ be a family of central elements of $L$. Then $Z = \bigwedge_i Z_i$ generates an ideal which is obviously the kernel of a congruence relation. Therefore by Theorems 8 and 11 of [3], $Z$ is neutral. Since $L$ is complemented, $Z$ is in the center of $L$.

BIBLIOGRAPHY


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**ADDENDUM TO SOME QUARTIC DIOPHANTINE EQUATIONS OF GENUS 3**

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I am indebted to Mr. K. Kloss of the Bureau of Standards, Washington, D. C., for many numerical instances of Theorem III applied to the equation

\[ L^3x^3 + M^3y^3 + N^3z^3 = 0. \]

For example, when \( a = 7, b = 15, c = 23 \), we can take

\[
\begin{array}{cccccc}
  p & q & r & L & M & N \\
  8280 & 4991 & 13335 & 12176 & 6473 & -3881 \\
  8280 & 16583 & 15855 & -20512 & 5297 & -353 \\
  11040 & 3703 & 14175 & 18208 & 10313 & -6073 \\
\end{array}
\]

These equations, which have no solutions, cannot be proved impossible by taking congruences mod 16.

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