

## $\beta$ -PRIME SPECTRUM OF STONE ALMOST DISTRIBUTIVE LATTICES

N. RAFI<sup>1</sup>

*Department of Mathematics*  
*Bapatla Engineering College*  
*Bapatla, Andhra Pradesh, India-522 101*

**e-mail:** rafimaths@gmail.com

AND

RAVI KUMAR BANDARU

*Department of Mathematics*  
*GITAM (Deemed to be University)*  
*Hyderabad Campus, Telangana, India-502 329*

**e-mail:** ravimaths83@gmail.com

### Abstract

The notion of boosters and  $\beta$ -filters in stone Almost Distributive Lattices are introduced and their properties are studied, utilizing boosters to characterize the  $\beta$ -filters. It has been derived that every proper  $\beta$ -filter is the intersection of all prime  $\beta$ -filters containing it, and it has also been proved that the set  $\mathcal{F}_\beta(L)$  of all  $\beta$ -filters is isomorphic to the set of all ideals of  $\mathcal{B}_0(L)$ . A set of equivalent conditions is derived for  $\mathcal{B}_0(L)$  to become a relatively complemented Almost Distributive Lattice. Later, some properties of the space of all prime  $\beta$ -filters are derived topologically. Finally, necessary and sufficient conditions are derived for the space of all prime  $\beta$ -filters to be a Hausdorff space.

**Keywords:** Almost Distributive Lattice (ADL), stone ADL, relatively complemented ADL, ideal, filter, booster,  $\beta$ -filters, isomorphism, compact set, Hausdorff space.

**2010 Mathematics Subject Classification:** 06D99, 06D15.

---

<sup>1</sup>Corresponding author.

## REFERENCES

- [1] G. Birkhoff, *Lattice Theory*, Amer. Math. Soc. Colloq. Publ. XXV (Providence, 1967).
- [2] G. Grätzer, *General Lattice Theory* (Academic Press, New York, Sanfransisco, 1978).
- [3] G.C. Rao, *Almost Distributive Lattices*, Doctoral Thesis (1980), Dept. of Mathematics, Andhra University, Visakhapatnam.
- [4] G.C. Rao, N. Rafi and R.K. Bandaru, *Closure operators in Almost Distributive Lattices*, Int. Math. Forum **5** (19) (2010) 929–935.
- [5] G.C. Rao, N. Rafi and B. Ravikumar, *On the prime filters of normal almost distributive lattices*, South. Asian Bull. Math. **35** (2011) 653–663.
- [6] G.C. Rao, N. Rafi and B. Ravikumar, *Topological characterization of dually normal almost distributive lattices*, Asian Eur. J. Math. **5** (2012) 1250043.  
doi:10-1142/S17355711250043X
- [7] G.C. Rao and S. Ravi Kumar, *Minimal prime ideals in an ADL*, Int. J. Contemp. Sci. **4** (2009) 475–484.
- [8] M. Sambasiva Rao,  *$\beta$ -filters of MS-algebras*, Asian Eur. J. Math. **5** (2012) 1250023 (8 pages).  
doi:10.1142/s1793557112500234
- [9] U.M. Swamy and G.C. Rao, *Almost Distributive Lattices*, J. Aust. Math. Soc. (Ser. A) **31** (1981) 77–91.  
doi:10.1017/s1446788700018498
- [10] U.M. Swamy, G.C. Rao and G. Nanaji Rao, *Pseudo-complementation on Almost Distributive Lattices*, South. Asian Bull. Math. **24** (2000) 95–104.  
doi:10.1007/s10012-000-0095-5
- [11] U.M. Swamy, G.C. Rao and G. Nanaji Rao, *Stone Almost Distributive Lattices*, South. Asian Bull. Math. **24** (2003) 513–526.

Received 22 March 2020

Revised 17 April 2020

Accepted 25 July 2020