

# On $L$ -fuzzy approximation operators on residuated lattices

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We consider properties of  $L$ -fuzzy relations and  $L$ -normal operators for a residuated lattice  $L$  in detail and show that the class  $\mathcal{R}_L(U)$  of all  $L$ -fuzzy relations on  $U$  and the class  $\mathcal{N}_L(U)$  of all  $L$ -normal operators are residuated lattices and they are isomorphic as lattices. Moreover, we prove that for any  $L$ -normal operators  $\mathcal{F}$ , it is reflexive (or transitive) if and only if the  $L$ -fuzzy relation  $R_{\mathcal{F}}$  induced by  $\mathcal{F}$  is reflexive (or transitive) respectively.

## References

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