Yahya Talebi, Atefeh Darzi

On graph associated to co-ideals of commutative semirings

Comment.Math.Univ.Carolin. 58,3 (2017) 293 –305.

Abstract: Let R be a commutative semiring with non-zero identity. In this paper, we introduce and study the graph $\Omega(R)$ whose vertices are all elements of R and two distinct vertices x and y are adjacent if and only if the product of the co-ideals generated by x and y is R. Also, we study the interplay between the graph-theoretic properties of this graph and some algebraic properties of semirings. Finally, we present some relationships between the zero-divisor graph $\Gamma(R)$ and $\Omega(R)$.

Keywords: semiring; co-ideal; maximal co-ideal
AMS Subject Classification: 16Y60, 05C75

References

[1] Akbari S., Habibi M., Majidinya A., Manaviyat R., *A note on co-maximal graph of non-commutative rings*, Algebr. Represent. Theory **16** (2013), 303–307.
[2] Anderson D.F., Livingston P.S., *The zero-divisor graph of a commutative ring*, J. Algebra **217** (1999), 434–447.
[3] Beck I., *Coloring of commutative rings*, J. Algebra **116** (1988), 208–226.
[4] Chaudhari J.N., Ingale K.J., *Prime avoidance theorem for co-ideals in semirings*, Research J. Pure Algebra **1(9)** (2011), 213–216.
[5] Ebrahimi Atani S., *The zero-divisor graph with respect to ideals of a commutative semiring*, Glas. Mat. **43(63)** (2008), 309-320.
[6] Ebrahimi Atani S., *An ideal-based zero-divisor graph of a commutative semiring*, Glas. Mat. **44(64)** (2009), 141–153.
[7] Ebrahimi Atani S., Dolati Pish Hesari S., Khoramdel M., *Strong co-ideal theory in quotients of semirings*, J. Adv. Res. Pure Math. **5** (2013), no. 3, 19–32.
[8] Ebrahimi Atani S., Dolati Pish Hesari S., Khoramdel M., *A fundamental theorem of co-homomorphisms for semirings*, Thai J. Math. **12** (2014), no. 2, 491–497.
[9] Golan J.S., *Semirings and Their Applications*, Kluwer Academic Publishers, Dordrecht, 1999.
[10] Maimani H.R., Salimi M., Sattari A., Yassemi S., *Comaximal graph of commutative rings*, J. Algebra **319** (2008), 1801–1808.
[11] Sharma P.K., Bhatwadekar S.M., *A note on graphical representation of rings*, J. Algebra **176** (1995), 124–127.
[12] West D.B., *Introduction to Graph Theory*, Prentice-Hall of India Pvt. Ltd, 2003.