Absorbing and weakly absorbing ideals of commutative rings

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Let R be a commutative ring with $1 \neq 0$. Recall that a proper ideal I of R is called a *2-absorbing ideal* of R if $a, b, c \in R$ and $abc \in I$, then $ab \in I$ or $ac \in I$ or $bc \in I$. A more general concept than 2-absorbing ideals is the concept of n-absorbing ideals. Let $n \geq 1$ be a positive integer. A proper ideal I of R is called an *n-absorbing ideal* of R if $a_1, a_2, ..., a_{n+1} \in R$ and $a_1 a_2 \cdots a_{n+1} \in I$, then there are n of the a_i's whose product is in I. The concept of n-absorbing ideals is a generalization of the concept of prime ideals (note that a prime ideal of R is a 1-absorbing ideal of R). In this talk, we will state recent developments on the study of absorbing ideals of commutative rings.

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References

[1] D. F. Anderson and A. Badawi, On n-absorbing ideals of commutative rings. Comm. Algebra **39**, 1646–1672(2011)

[2] D. F. Anderson and A. Badawi, On (m,n)-closed ideals of commutative rings. J. Algebra Appl. 16 (2017), no. 1, 1750013, 21 pp

[3] A. Badawi, On 2-absorbing ideals of commutative rings. Bull. Austral. Math. Soc. **75**, 417–429(2007)

[4] A. Badawi, n-absorbing ideals of commutative rings and recent progress on three conjectures: a survey. Rings, polynomials, and modules, 33-52, Springer, Cham, 2017.

[5] A. Badawi, M. Issoual and N. Mahdou, On n-absorbing ideals and (m,n)-closed ideals in trivial ring extensions of commutative rings, (Available on Line), to appear in Journal of Algebra and Its Applications.

[6] D. Bennis and B. Fahid, Rings in which every 2-absorbing ideal is prime, Beitr Algebra Geom **59**, 391–396(2018)

[7] P. J. Cahen, M. Fontana, S. Frisch, and S. Glaz, Open problems in commutative ring theory, Commutative Algebra. Springer, 353–375(2014)

[8] H. Seung Choi and A. Walker, The radical of an n-absorbing ideal. arXiv:1610.10077 [math.AC] (2016) (to appear in Journal of Commutative Algebra).

[9] A. Yousefian Darani and E.R. Puczyowski, On 2-absorbing commutative semigroups and their applications to rings. Semigroup Forum **86**, 83–91(2013)

[10] . Issoual and N. Mahdou, Najib Trivial extensions defined by 2-absorbing-like conditions. J. Algebra Appl. 17 (2018), no. 11, 1850208, 10 pp.

[11] H. Fazaeli Moghimi and S. Rahimi Naghani, On n-absorbing ideals and the n-Krull dimension of a commutative ring. J. Korean Math. Soc. **53**, 1225-1236(2016)

[12] A. Laradji, On n-absorbing rings and ideals, Colloq. Math. **147**, 265–273(2017).

[13] . Mukhtar, M. Tusif Ahmad and T. Dumitrescu, Commutative rings with two-absorbing factorization. Commun. Algebra **46**, 970–978(2018)