

Accepted Manuscript

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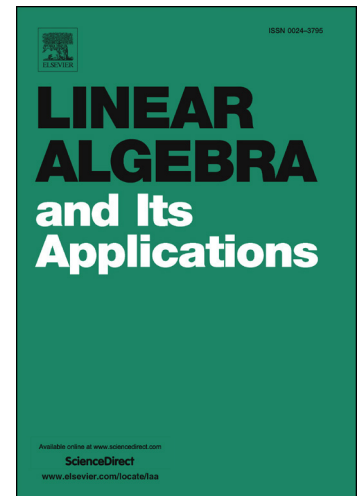
PII: S0024-3795(17)30559-1
DOI: <https://doi.org/10.1016/j.laa.2017.09.025>
Reference: LAA 14331

To appear in: *Linear Algebra and its Applications*

Received date: 24 April 2017
Accepted date: 20 September 2017

Please cite this article in press as: R.B. Bapat et al., Outer Inverses and Jacobi Type Identities, *Linear Algebra Appl.* (2017), <https://doi.org/10.1016/j.laa.2017.09.025>

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Outer Inverses and Jacobi Type Identities

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Abstract

We consider matrices over a commutative ring and characterize the class of outer inverses for which Jacobi type identities can be extended. We obtain a necessary and sufficient condition for the existence of Rao-regular Drazin inverse in terms of sum of principal minors of A^k for some k . Also, we obtain determinantal formula for the Rao-regular Drazin inverse. Conjectures are formulated which give expressions for outer inverse and the conjectures are proved in some special cases.

Keywords: matrices over commutative ring, outer inverse, generalized inverse, Rao-regular matrix, Jacobi identity, determinantal formula

2010 MSC: 15A09, 06A06, 16D25

1. Preliminaries

Jacobi identity relates any minor of A^{-1} , the inverse of matrix A , with determinant $|A|$ and the complementary minor in transpose of A . Several extensions have been attempted by several authors, when the matrix A is singular and

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¹Author acknowledge the support by "Science and Engineering Research Board (DST, Govt. of India)" under Extra Mural Research Funding Scheme (SR/S4/MS:870/14).

²Author acknowledge the support of Manipal University through Dr. TMA Pai Ph.D. Scholarship Fellowship.

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