Eigenvalue (linear algebra)

Def

The definition of eigenvalues and eigenvectors

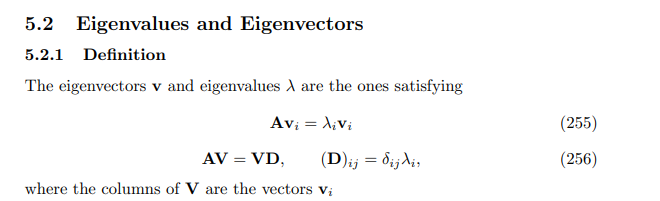
where

is Kronecker delta.

That is,

, if

, otherwise



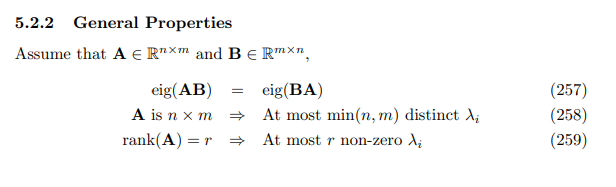
Property

Given matrix with size and matrix with size .

1.

2. has at most distinct eigenvalues.

3 . If => At most non-zero eigenvalues.



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=> summation of eigenvalue of andis equivalent.

The row rank of or . The column rank of is or . There are at most

= distinct eigenvalues.

Consider the relationship between nullity and rank.

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Since there are at least eigenvalues that are zero in matrix ,

there are at most = eigenvalues that are non-zero at matrix .

Ref

[Kronecker Delta -- from Wolfram MathWorld](https://mathworld.wolfram.com/KroneckerDelta.html)

[Wayback Machine (archive.org)](https://web.archive.org/web/20090521075124/http://www2.imm.dtu.dk/pubdb/views/edoc_download.php/3274/pdf/imm3274.pdf)