Diagonalization and Change of Basis in Linear Algebra

D. J. Jeffrey[1*]
[1] University of Western Ontario
email. djeffrey@uwo.ca

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A common topic in a first course on Linear Algebra is diagonalization using eigenvectors [1]. Typically the textbooks define "similarity" as $B = V^{-1}AV$ with the justification that the eigenvalues of A and B are the same. Later in the course (and in the text book) there is a brief section on change of basis. No connection is made between the topics. In this talk, I show the connection. It gives a geometrical justification for the similarity transform, and some nice plots. The change of basis connection extends to other diagonalizations met in more advanced courses: topics such as the SVD factors of a matrix.

References

[1] David Poole, Linear Algebra, 4th ed., ISBN 978-1-285-46324-7, Cengage Learning 2015.

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