

# Berezinian

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Parallel to <http://en.wikipedia.org/wiki/Berezinian>

For an invertible <sup>even</sup> supermatrix,  $\text{Ber}$  is defined by the following two properties:

$$* \text{Ber}(XY) = \text{Ber}(X)\text{Ber}(Y)$$

$$* \text{Ber}(e^X) = e^{\text{str}(X)} \quad \text{str}\begin{pmatrix} A & B \\ C & D \end{pmatrix} = \text{tr}(A) - \text{tr}(D)$$

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Properties:  $\text{Ber}\begin{pmatrix} A & 0 \\ 0 & D \end{pmatrix} = (\det A)(\det D)^{-1}$

$$\begin{aligned} \text{Ber}\begin{pmatrix} A & B \\ C & D \end{pmatrix} &= \det(A - BD^{-1}C) \det(D)^{-1} \\ &= \det(A) \det(D - CA^{-1}B)^{-1} \end{aligned}$$