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(* :Date: March 07, 2022 *)
(* :Description: Package with useful routines in quantum mechanics *)
BeginPackage["qmDS`"]

ObservableEV::usage="ObservableEV[SqMatrix,Eigenvalue] gives de set of eigenvectors
Proyector::usage="Proyector[Vector] constructs the ket-bra using the same vector."
ExpectationValue::usage="ExpectationValue[SqMatrix,State] gives the expectation val
Conmutator::usage="Conmutator[SqMatrix1,SqMatrix2] constructs the conmutator betwee
GeneralProbability::usage="GeneralProbability[SqMatrix,State,Eigenvalue] gives the
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Begin["`Private`"]
(* ObservableEV *)
ObservableEV[SqMatrix_,EigValue_]:=Eigenvectors[SqMatrix][[Flatten[Position[Eigenvalues
```

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(* Proyector *)
Proyector[Vector_]:=Outer[Times,Vector,Conjugate[Vector]]
```

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(* ExpectationValue *)
ExpectationValue[SqMatrix_,State_]:=Conjugate[State] . (SqMatrix . State)
```

```
(* Conmutator *)
Conmutator[SqMatrix1_,SqMatrix2_]:=SqMatrix1 . SqMatrix2 - SqMatrix2 . SqMatrix1
```

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(* GeneralProbability *)
GeneralProbability[SqMatrix_,State_,Eigenvalue_]:=Piecewise[{{(Abs[# . State]^2)/(Norm[#
```

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End[];
EndPackage[]
```