

## A simple implementation of intersecting subspaces specified by a basis

```
BeginPackage["QuantumGroups`Utilities`IntersectSubspaces`"]
```

```
IntersectSubspaces::usage =
  "IntersectSubspaces[n, $\beta_1,\beta_2,\dots$ ] gives a basis for the intersection
  of the subspaces of  $A^n$  spanned by the  $\beta_i$ .";
```

```
Begin["`Private`"];
```

```
IntersectSubspaces[n_, {}] := IdentityMatrix[n]
```

```
IntersectSubspaces[n_, {basis_}] := basis
```

```
IntersectSubspaces[n_, {{}, _}] := {}
IntersectSubspaces[n_, {_, {}}] := {}
```

```
IntersectSubspaces[n_, {basis1_, basis2_}] :=
  NullSpace[Join@@(NullSpace /@ {basis1, basis2})]
```

```
IntersectSubspaces[n_, {basis1_, basis2_, bases__}] :=
  IntersectSubspaces[n, {basis1, IntersectSubspaces[n, {basis2, bases}]}
```

```
End[];
```

```
EndPackage[];
```