Fixed subspaces and reconstruction of the generators

For the supplied family, write $f_{i,n} = \alpha_i(f_n)$. On the matching fiber its common fixed projection is the projection onto $\mathbb{C}\xi_i$; on an inequivalent fiber it is zero. Coordinatewise reasoning therefore identifies the common range in $\mathcal{H}$ with $\mathbb{C}b_i$. These are strong, vectorwise consequences of decreasing projections, not operator-norm limits.

In an arbitrary representation of the generated algebra, shell sums and their adjoints are reconstructed on that representation's own Hilbert space. The generator splits into a strong shell sum and its residual corner. Nonzero irreducibility prevents every transported fixed space from vanishing. A surviving index i_0 may be different from the root class o; its vector is transported to a common root vector ζ, then pulled back to the compatible vectors η_i. No equality $\eta_o = \zeta$ is imposed until the additional root-generator normalization is available.

Exact Card references

- Shell matching fixes the trace of transported flags — MathlibAnnex.CStarAlgebra.CAR.trace_transportedFlag
- Transported flags vanish on vectors generated by a trace vector — MathlibAnnex.CStarAlgebra.CAR.tendsto_transportedFlag_orbit_zero
- The matching GNS fiber retains exactly its cyclic line — MathlibAnnex.CStarAlgebra.CAR.selected_commonFixedProjection_eq_rankOne
- An inequivalent GNS fiber has no residual common range — MathlibAnnex.CStarAlgebra.CAR.selected_commonFixedProjection_eq_zero
- The atomic common range is one embedded GNS line — MathlibAnnex.CStarAlgebra.CAR.iInf_range_atomic_transportedFlag_eq_span
- Reconstructing a represented unitary from its shells and residual corner — MathlibAnnex.CStarAlgebra.CAR.exists_targetShellReconstruction
- An irreducible target representation has a surviving fixed space — MathlibAnnex.CStarAlgebra.CAR.exists_nonzero_targetFixedSpace
- A common root vector realizes every selected state through the generators — MathlibAnnex.CStarAlgebra.CAR.exists_targetDefectVectorFamily

Boundary Inputs

The displayed edges preserve dependency paths through omitted helpers. Levels count selected predecessors within this scope. Mathematical citations remain distinct from formal dependencies.

Exact source and provider boundary · Earlier 466-declaration Project view and PDF

Dependency-first reading route

Levels belong to this reading scope. Follow prerequisites or uses to focus the route.

Level 0

LEVEL 0

Shell matching fixes the trace of transported flags

`MathlibAnnex.CStarAlgebra.CAR.trace_transportedFlag`

Recovers exact trace values from the initial and final supports of shell links.

IMMEDIATE PREREQUISITES IN THIS PROJECT

None in this scope

USED BY IN THIS PROJECT

Transported flags vanish on vectors generated by a trace vector

Open Declaration Card **Read exact source**

LEVEL 0

The matching GNS fiber retains exactly its cyclic line

`MathlibAnnex.CStarAlgebra.CAR.selected_commonFixedProjection_eq_rankOne`

Identifies the residual projection of a transported CAR flag in its matching pure-state representation.

IMMEDIATE PREREQUISITES IN THIS PROJECT

None in this scope

USED BY IN THIS PROJECT

The atomic common range is one embedded GNS line

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LEVEL 0

An inequivalent GNS fiber has no residual common range

`MathlibAnnex.CStarAlgebra.CAR.selected_commonFixedProjection_eq_zero`

Uses compression and cyclic transport to exclude fixed vectors in every other chosen pure-state class.

IMMEDIATE PREREQUISITES IN THIS PROJECT

None in this scope

USED BY IN THIS PROJECT

The atomic common range is one embedded GNS line

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LEVEL 0

Reconstructing a represented unitary from its shells and residual corner

`MathlibAnnex.CStarAlgebra.CAR.exists_targetShellReconstruction`

Separates a represented generator into a strong shell sum and the exact operator between its limiting fixed spaces.

IMMEDIATE PREREQUISITES IN THIS PROJECT

None in this scope

USED BY IN THIS PROJECT

An irreducible target representation has a surviving fixed space

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Level 1

LEVEL 1

Transported flags vanish on vectors generated by a trace vector

`MathlibAnnex.CStarAlgebra.CAR.tendsto_transportedFlag_orbit_zero`

Turns decay of projection traces into norm convergence on each source-orbit vector.

IMMEDIATE PREREQUISITES IN THIS PROJECT
Shell matching fixes the trace of transported flags

USED BY IN THIS PROJECT
None in this scope

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LEVEL 1

The atomic common range is one embedded GNS line

`MathlibAnnex.CStarAlgebra.CAR.iInf_range_atomic_transportedFlag_eq_span`

Assembles the matching and inequivalent fiber calculations in an arbitrary Hilbert direct sum.

IMMEDIATE PREREQUISITES IN THIS PROJECT
The matching GNS fiber retains exactly its cyclic line, An inequivalent GNS fiber has no residual common range

USED BY IN THIS PROJECT
None in this scope

Open Declaration Card **Read exact source**

LEVEL 1

An irreducible target representation has a surviving fixed space

`MathlibAnnex.CStarAlgebra.CAR.exists_nonzero_targetFixedSpace`

Rules out simultaneous disappearance of all limiting CAR flags by passing reduction through the reconstructed generators.

IMMEDIATE PREREQUISITES IN THIS PROJECT
Reconstructing a represented unitary from its shells and residual corner

USED BY IN THIS PROJECT
A common root vector realizes every selected state through the generators

Open Declaration Card **Read exact source**

Level 2

LEVEL 2

A common root vector realizes every selected state through the generators

`MathlibAnnex.CStarAlgebra.CAR.exists_targetDefectVectorFamily`

Builds a compatible family of unit vectors from a surviving residual space and identifies their CAR vector states.

IMMEDIATE PREREQUISITES IN THIS PROJECT

An irreducible target representation has a surviving fixed space

USED BY IN THIS PROJECT

None in this scope

Open Declaration Card **Read exact source**