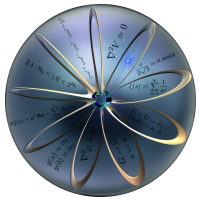

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normal category

Canonical name	NormalCategory
Date of creation	2013-03-22 18:20:31
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Owner	CWoo (3771)
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Numerical id	8
Author	CWoo (3771)
Entry type	Definition
Classification	msc 18E10
Synonym	normal monic
Synonym	conormal epi
Defines	normal
Defines	normal monomorphism
Defines	normal subobject
Defines	conormal
Defines	conormal epimorphism
Defines	conormal category
Defines	conormal quotient object

A monomorphism is a category is said to be *normal* if it is a kernel (of a morphism). A subobject of an object is *normal* if any (and hence all) of its representing monomorphisms is normal.

For example, in **Grp**, the category of groups, the inclusion of a subgroup $H \subseteq G$ into G is normal iff H is a normal subgroup of G.

A category is said to be *normal* if every monic is a kernel. Equivalently, a normal category is a category in which every subobject of every object is normal.

Dually, an epimorphism is *conormal* if it is a cokernel (of a morphism). A quotient object of an object is *conormal* if any (and hence all) of its representing epimorphisms is conormal. A category is said to be *conormal* if every epimorphism is conormal.

The category **AbGrp** of abelian groups, and more generally, any abelian category, is normal and conormal.

References

[1] C. Faith *Algebra: Rings, Modules, and Categories I*, Springer-Verlag, New York (1973)