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4.4 Co-representations

By analogy with associative algebras, representations correspond to right modules. The analog of left ~~represent~~ module is corepresentation

<u>Def</u> A corepresentation of Leibniz alg $\mathfrak{g}$ is a k-module (for us a vector space) N together with 2 actions

$$\mathfrak{g} \times N \longrightarrow N \qquad \text{and} \qquad N \times \mathfrak{g} \longrightarrow \mathfrak{g}$$

(MLL)′ $[[x,y],m] = [x,[y,m]] - [y,[x,m]]$

(LML)′

(LLM)′ $[[m,x],y] = [m,[x,y]] - [[y,m],x]$

$$\boxed{[y,[m,x]] = [[y,m],x] - [m,[x,y]]}$$

(think right derivations with a twist (not quite!))

The last two axioms imply

(ZD)′ $$[y,[m,x]] + [[m,x],y] = 0$$

$N \otimes_k M$ tensor product of co-rep N and rep M (ignore for now)

⟨ It might be a good idea to continue with reference [47] in Rakhimov Survey ⟩