

REGULAR HOM-LIE STRUCTURES ON INCIDENCE ALGEBRAS

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A *Hom-Lie algebra* [3,4] over a field K is a triple $(L, [\cdot, \cdot], \varphi)$, where L is a K -vector space, $[\cdot, \cdot]$ is an anti-commutative bilinear multiplication on L and $\varphi : L \rightarrow L$ is a linear map satisfying the so-called *Hom-Jacobi identity*

$$[[a, b], \varphi(c)] + [[b, c], \varphi(a)] + [[c, a], \varphi(b)] = 0$$

for all $a, b, c \in L$. A Hom-Lie algebra $(L, [\cdot, \cdot], \varphi)$, in which φ is an automorphism of $(L, [\cdot, \cdot])$, is called *regular* [5]. If $(L, [\cdot, \cdot])$ is itself a (usual) Lie algebra, then by a (regular) *Hom-Lie structure* on L we mean a linear map $\varphi : L \rightarrow L$ making $(L, [\cdot, \cdot], \varphi)$ a (regular) Hom-Lie algebra.

In this talk we will describe regular Hom-Lie structures on the incidence algebra $I(X, K)$ (under the commutator product) of a finite connected poset X over a field K . Our description is based on the description of Lie automorphisms of $I(X, K)$ given in [1].

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