Flat connections with singularities in some Lie algebroids
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We study flat connections in some Lie algebroids A defined everywhere but a finite number of points. Under some assumptions ($H^{top}(A) \neq 0$, the structural Lie algebras $\mathfrak{g} = \mathbb{R}$, $sk(3)$ or $sl(2, \mathbb{R})$, $\dim M = \dim \mathfrak{g} + 1$) with any such isolated singularity we join a real number called an index. We prove the index theorem saying that the index sum is independent of the choice of a connection (for M compact and oriented). Multiplying this index sum by the orientation class of M, we get the Euler class of this Lie algebroid. Some integral formulae for indexes are given.