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Classification of Seven-Dimensional Lie Algebras with $H \oplus \mathbb{R}^3$ Nilradical. Preliminary report.

Low dimensional solvable Lie algebra classification started back in 1963 by Mubarakzhanov. Solvable Lie algebras were completely classified up to dimension six. A general theorem asserts that if \mathfrak{g} is a solvable Lie algebra of dimension n , then the dimension of the nilradical is at least $\frac{n}{2}$. For the seven-dimensional algebras, the nilradical's dimension could be 4, 5, 6 or 7. The four and seven dimensional nilradical cases were classified. We examine the six-dimensional nilradical case, and depending on the structure of this nilradical there are 32 classes. In this project we focus on the class where the nilradical is to a direct sum of a three-dimensional Heisenberg and a three-dimensional abelian algebras ($H \oplus \mathbb{R}^3$). (Received September 20, 2015)