ABSTRACT. The abelian group $\operatorname{Pext}^1_{\mathbb{Z}}(G, H)$ of pure extensions has recently attracted the interest of workers in non-commutative topology, especially those using KK-theory, since under minimal hypotheses the closure of zero in the Kasparov group $KK_*(A, B)$ (for separable C^*-algebras A and B) is isomorphic to the group

$$\operatorname{Pext}^1_{\mathbb{Z}}(K_*(A), K_*(B)).$$

As $K_*(A)$ and $K_*(B)$ can take values in all countable abelian groups, assuming that G and H are countable is natural.

In this mostly expository work we survey the known (and not so well-known) properties of Pext and its relationship to $\lim^1$ and develop some new results on their computation.