

## IRREDUNDANT FAMILIES

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A family of subsets of  $\omega$  is called irredundant provided no element  $\mathcal{I}$  is a subset modulo finite of the union of finitely many other elements of  $\mathcal{I}$ , and  $\mathcal{I}$  is maximal irredundant if it is an irredundant family and there is no irredundant family strictly extending  $\mathcal{I}$ . The cardinal invariant  $\mathfrak{s}_{mm}$ , defined by D. Monk, is defined as the minimum cardinality of a maximal irredundant family. Monk asked whether the equality  $\mathfrak{u} = \mathfrak{s}_{mm}$  was provable in ZFC. We answer this question in the negative by proving that  $\mathfrak{d} \leq \mathfrak{s}_{mm}$  holds in ZFC, among other results. This is joint work with O. Guzmán-González and A. W. Miller.