1023-05-1526 David J. Grynkiewicz* (diambri@hotmail.com), Departamento de Matematica Aplicada IV, Universitat Politecnica de Catalunya, Campus Nord, Edifici C3, C. Jordi Girona, 1-3, 08034 Barcelona, Barcelona, Spain, Oriol Serra, Departamento de Matematica Aplicada IV, Universitat Politecnica de Catalunya, Campus Nord, Edifici C3, C. Jordi Girona, 1-3, 08034 Barcelona, Barcelona, Spain, and Yahya Hamidoune, Equipe Combinatoire, Universite de Paris VI (Pierre et Marie Curie, 75005 Paris, France. Extending the Freiman $3 k-3$ Theorem to distinct sets. Preliminary report.
A classical additive result of Freiman says that if $A$ is a subset of integers with $|2 A|=2|A|-1+r \leq 3|A|-4$, then $A$ is contained in an arithmetic progression of length at most $|A|+r$. Freiman also described the structure when $|2 A|$ attained the threshold value $3|A|-3$. A variety of independent results of Hamidoune, Lev and Smeliansky, and Stanchescu, extended the first result to distinct sets of integers $A$ and $B$, including the case $|A+B| \leq|A|+2|B|-4$, where $|B| \leq|A|$, as well as some partial results when $|A+B|=|A|+2|B|-3$. We give a new proof of the distinct set case that yields the description for all cases when $|A+B|=|A|+2|B|-3$, where $|B| \leq|A|$. (Received September 26, 2006)

