1067-05-1632   **Andrew B Ray*** (`ray.andrew@gmail.com`), 2532 T St. Apt. 5, Lincoln, NE 68503.
Reconstruction of graphs from metric balls of their vertices.

Given a graph G, the metric ball of radius r about a vertex v is $B_r(v) = \{w \in V(G) : d(v, w) \leq r\}$. We prove a conjecture of Levenshtein, that if G has girth at least $2r + 3$ and no terminal vertices then we can reconstruct G from the function B_r. This is best possible since a cycle on $2r + 2$ vertices cannot be reconstructed in this way. The previous best known result was for graphs with girth at least $2r + 2\lceil (r - 1)/4 \rceil + 1$ and no terminal vertices. (Received September 21, 2010)

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