1073-54-41 **Harold Bennett**, **Dennis Burke** and **David Lutzer*** (`lutzer@math.wm.edu`). *Some Questions on Rotoids.* Preliminary report.

A space X is a rotoid if there is a special point $e \in X$ and a homeomorphism F from X^2 onto itself with the properties: (i) $F(x,x) = (x,e)$ for all $x \in X$, and (ii) $F(e,x) = (e,x)$ for all $x \in X$. If an arbitrary point of X can be used as the special point e, then X is a strong rotoid(Arhangelskii). Every topological group $(G,*)$ is a rotoid and previous research has shown that certain theorems for topological groups can be proved for some more general spaces. For example, A. Gulko proved that first-countable T_3 rectifiable spaces, and T_3 rectifiable spaces with countable π-character, are metrizable, where rectifiable spaces are another type of space with a flexible diagonal. Any rectifiable space is a rotoid, and Arhangelskii asked four questions about rotoids:

8.13 Is every strong rotoid rectifiable?

8.20 Is the Sorgenfrey line a rotoid?

8.21 Is every first-countable (strong) rotoid metrizable?

8.22 Is every (strong) rotoid of countable π-character metrizable?

In this paper answer 8.20 affirmatively, thereby answering the other three questions negatively, and we show that other familiar spaces, such as the Michael line, are not rotoids. (Received July 19, 2011)