1102-05-213 **N. Warnberg*** (njwarnberg@gmail.com), **S. Butler**, **L. Hogben**, **R. Martin**, **D. Stolee**, **M. Young**, **C. Erickson**, **K. Hogenson**, **J. Lin**, **R. Kramer** and **L. Kramer**. *Coloring the integers modulo n.* Preliminary report.

A k-term arithmetic progression in $\mathbb{Z}_n$ is a set of distinct elements of the form

$$a \mod n,\ a+d \mod n,\ a+2d \mod n,\ \ldots,\ a+(k-1)d \mod n$$

where $d \geq 1$ and $k \geq 2$. An r-coloring of $\mathbb{Z}_n$ is a function $c : \mathbb{Z}_n \to [r]$ where $[r] = \{1, 2, \ldots, r\}$. We say such a coloring is exact if c is surjective and an arithmetic progression is rainbow if the image of the progression is injective. The anti-van der Waerden number, $\mathrm{aw}(\mathbb{Z}_n, k)$, denotes the smallest number of colors with which elements of the cyclic group of order n can be colored and still guarantee there is a rainbow arithmetic progression of length k. In this setting, arithmetic progressions can "wrap around." We will concentrate on results with $k = 3$. (Received July 29, 2014)