1116-05-2473 **Sohail Farhangi*** (`sohail3@vt.edu`), 208 Turner Street Northwest Suite #215, Blacksburg, VA 24061. *On the 2-Large is Large conjecture. A Generalization of Van der Waerden's Theorem.* Preliminary report.

The classical theorem of Van der Waerden, which states that for any finite partition of the positive integers, at least one of the partition classes must contain arbitrarily long arithmetic progressions. One way in which we can try to generalize this theorem, is to restrict the set of allowable arithmetic progressions, and a reasonable way to do this is to take a subset S of the positive integers, and only look for arithmetic progressions whose common difference is an element of S (S-A.P.). We call a set S Large, if for any finite partition of the positive integers, at least one of the partition classes must contain arbitrarily long $S-$A.P.s. In attempt to classify all Large sets, we define a set of positive integers S to be $r-$Large, if for any partition of the positive integers into r classes, we have that at least one of the partition classes must contain arbitrarily long $S-$A.P.s. One would expect the existence of a set S such that S is $r-$Large for some r, but is not $(r+1)-$Large, and conseuquently, not Large. However, no such examples of a set S have been found, and this has lead to a conjecture of Landman, Brown, and Graham, that if a set is $2-$Large, then it is Large. (Received September 22, 2015)