

1116-03-2900 **Mojtaba Moniri*** (m-moniri@wiu.edu). *Additive vs. Multiplicative Near-linearity in Open Induction.*

For a function $f : M \rightarrow M$ over a model of some fragment of arithmetic, consider two homogeneous near-linearity properties

$$(\forall x, y)[f(x + y) = f(x) + f(y) \vee f(x + y) = f(x) + f(y) + 1] \quad (\text{ANL}),$$

$$(\forall x, y)[yf(x) < xf(y) + x] \quad (\text{MNL}),$$

and two inhomogeneous (meaning not necessarily homogeneous) such:

$$(\forall x, y, z)[f(x + y) + f(z) = f(x) + f(y + z) \vee f(x + y) + f(z) = f(x) + f(y + z) \pm 1] \quad (\text{IANL}),$$

$$(\forall x, y, u, v)[v(f(x + y) - f(x) - 1) < y(f(u + v) - f(u) + 1)] \quad (\text{IMNL}).$$

Theorem. For a function f over a model of Open Induction, MNL is stronger than ANL, and IMNL is stronger than IANL. (Received September 22, 2015)