A NEW LOOK AT THE DUAL DISCRIMINATOR

PAOLO AGLIANÒ

DIISM, Università di Siena, Siena, Italy

The dual discriminator function d(x, y, z) on a set A is defined as follows; for $a, b, c \in A$

$$d(a,b,c) = egin{cases} a & ext{if } a = b \ c & ext{if } a
eq b \end{cases}$$

A variety V is a **dual discriminator variety** if there is a term that is the dual discriminator on any subdirectly irreducible algebra in V. The chief example of a dual discriminator variety that is not a discriminator variety is the variety D of distributive lattices. The dual discriminator function has been introduced a long time ago [3] but not a lot has been done with it. Lately my interest has been rekindled by a paper by Caicedo et. al. [1], in which dual discriminator varieties are connected with primitivity. To make a long story short a variety is primitive if every subquasivariety is a variety and in [1] it has been shown that an idempotent dual discriminator variety is primitive.

I shall try to generalize this result in two direction:

- first I will try to give it a meaning also in case of quasivarieties, using the concept of *implicit dual discriminator*, building on the results in [2];
- secondly I will inestigate if some kind of weakened version of the dual discriminator can yield similar conclusion; to do this I'll revisit a very old draft jointly written with K. Baker in the late 1990's, that had a limited circulation at the time and was never published.

A word of caution: this is absolutely work-in-progress with all the akwardness and imperfections typical of this stage.

References

- X. Caicedo, M. Campercholi, K. Kearnes, P. Sanchèz Terraf, A. Szendrei, and D. Vaggione, Every minimal dual discriminator variety is minimal as a quasivariety, Algebra Universalis 82 (2021), 36.
- [2] M. Campercholi and D. Vaggione, Implicit definition of the quaternary discriminator, Algebra Universalis 68 (2012), 1–16.
- [3] E. Fried and A. Pixley, The dual discriminator function in universal algebra, Acta Sci. Math. (Szeged) 41 (1979), 83–100.

E-mail address: agliano@live.com.