

# Predicate Calculus for Boolean Valued Functions.

## Part VIII

Shunichi Kobayashi  
Ueda Multimedia Information Center  
Nagano

**Summary.** In this paper, we proved some elementary predicate calculus formulae containing the quantifiers of Boolean valued functions with respect to partitions. Such a theory is an analogy of usual predicate logic.

MML Identifier: BVFUNC16.

WWW: <http://mizar.org/JFM/Vol11/bvfunc16.html>

The articles [1], [6], [5], [8], [7], [4], [2], and [3] provide the notation and terminology for this paper.

In this paper  $Y$  is a non empty set.

One can prove the following proposition

- (1) For every element  $a$  of  $\text{Boolean}^Y$  and for every subset  $G$  of  $\text{PARTITIONS}(Y)$  and for all partitions  $A, B$  of  $Y$  holds  $\neg \exists_{\forall_{a,A} G, B} G \in \exists_{\exists_{\neg a, B} G, A} G$ .

### REFERENCES

- [1] Library Committee. Boolean properties of sets — definitions. *Journal of Formalized Mathematics*, EMM, 2002. [http://mizar.org/JFM/EMM/xboole\\_0.html](http://mizar.org/JFM/EMM/xboole_0.html).
- [2] Shunichi Kobayashi and Kui Jia. A theory of boolean valued functions and partitions. *Journal of Formalized Mathematics*, 10, 1998. [http://mizar.org/JFM/Vol10/bvfunc\\_1.html](http://mizar.org/JFM/Vol10/bvfunc_1.html).
- [3] Shunichi Kobayashi and Yatsuka Nakamura. A theory of boolean valued functions and quantifiers with respect to partitions. *Journal of Formalized Mathematics*, 10, 1998. [http://mizar.org/JFM/Vol10/bvfunc\\_2.html](http://mizar.org/JFM/Vol10/bvfunc_2.html).
- [4] Konrad Raczkowski and Paweł Sadowski. Equivalence relations and classes of abstraction. *Journal of Formalized Mathematics*, 1, 1989. [http://mizar.org/JFM/Vol1/eqrel\\_1.html](http://mizar.org/JFM/Vol1/eqrel_1.html).
- [5] Andrzej Trybulec. Function domains and Frænkel operator. *Journal of Formalized Mathematics*, 2, 1990. <http://mizar.org/JFM/Vol2/fraenkel.html>.
- [6] Zinaida Trybulec. Properties of subsets. *Journal of Formalized Mathematics*, 1, 1989. [http://mizar.org/JFM/Vol1/subset\\_1.html](http://mizar.org/JFM/Vol1/subset_1.html).
- [7] Edmund Woronowicz. Interpretation and satisfiability in the first order logic. *Journal of Formalized Mathematics*, 2, 1990. [http://mizar.org/JFM/Vol2/valuat\\_1.html](http://mizar.org/JFM/Vol2/valuat_1.html).

- [8] Edmund Woronowicz. Many-argument relations. *Journal of Formalized Mathematics*, 2, 1990. <http://mizar.org/JFM/Vol2/margrell.html>.

*Received November 4, 1999*

*Published April 20, 2002*

---