The verification of the equality $a(0) \cap b(0) = (a + xb)(0)$ is now quite routine.

Now, to every ideal $\mathfrak{A}$ in $\mathbf{S}$ we assign the subset $\Phi(\mathfrak{A})$ of $\exp I$, given by

$$\Phi(\mathfrak{A}) = \{X \in \exp I \mid \exists x \in \mathfrak{A} : X = x(0)\} . \tag{5}$$

It follows without trouble from Proposition 2 that Φ is a $1-1$ correspondence between the lattice of ideals in and the lattice of filters on the index set I and that this correspondence preserves the inclusion relation, i.e. it is an isomorphism of both lattices. According to Theorem 2 we get the following result:

Theorem 3. *The ideal $\mathfrak{A}$ in the ring $\mathbf{X}_{i \in I} F_i$ is a prime ideal if and only if the set (5) is an ultrafilter on the index set I.*

References

[1] *Bourbaki N.:* Théorie des ensembles (russian translation: Burbaki N.: Teorija množestv), izd. "Mir", Moskva 1965.

[2] *Ježek J.:* Universal algebra and model theory (Czech. orig.: Univerzální algebra a teorie modelů), SNTL - nakladatelství technické literatury, Praha 1976.

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