The Largest Cardinals of Homeomorphic Class and Isomorphic Class of Set-lattices on an Infinite Set*

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Let X be an infinite set, $K=\{\tau:\tau$ is a topology on $X\}$, $C=\{\tau:\tau\in K\ \&\ \tau$ is a complete lattice of sets with respect to operations of arbitrary intersection and union$\}$.

Theorem 1 For a given $\tau\in K$, we define $\langle\tau\rangle=\{\sigma:\sigma\in K\ \&\ \sigma$ and τ are homeomorphic$\}$, then $\sup\{|\langle\tau\rangle|:\tau\in K\}=\max\{|\langle\tau\rangle|:\tau\in K\}=2^{|X|}=\exp(|X|)$.

Theorem 2 $\sup\{|\langle\tau\rangle|:\tau\in C\}=\max\{|\langle\tau\rangle|:\tau\in C\}=\exp(|X|)=2^{|X|}$.

Theorem 3 For a given $\tau\in C$, we define $\widehat{\tau}=\{\sigma:\sigma\in C\ \&\ \sigma$ and τ are isomorphic lattices of sets$\}$, then $\sup\{|\widehat{\tau}|:\tau\in C\}=\max\{|\widehat{\tau}|:\tau\in C\}=\exp(|X|)$.

References

[1] Birkhoff, G., Lattice Theory, 1948 (revised edition), p. 49—64.

[2] Engelking, R., General Topology, 1977, p. 16., p, 27.

[3] Kuratowski, K. and Mostowski, A., Set Theory, 1976., p.42,. p.83., p.145—163.

[4] Sierpinski, W., General Topology, 1952, p.38., p.48.

[5] Yang An-zhou et al., Cardinal Numbers of Some Sets (I), *Journal of the Beijing Polytechnic University*, *Vol*.8., No.3. (sept., 1982), p. 132., the first part of theorem 5.

[6] Yang An-zhou, Cardinal Numbers of Some Sets (V), send to Kuxue Tongbao, to appear.

[7] Yang An-zhou, Cardinal numbers of some sets (VI), *Journal of the Beijing Polytechnic University*, Vol. 9., No. 2. (june, 1983), p. 12.

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