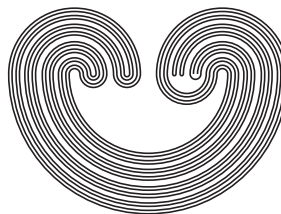


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UNIFORMITY OF UNIFORM CONVERGENCE ON THE FAMILY OF SETS

by

ALEXANDER V. OSIPOV

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Auburn University, Alabama 36849, USA

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UNIFORMITY OF UNIFORM CONVERGENCE ON THE FAMILY OF SETS

ALEXANDER V. OSIPOV

ABSTRACT. We prove that for every Tychonoff space X and any uniform cub-space (Y, \mathcal{U}) , the topology on $C(X, Y)$, induced by the uniformity $\hat{\mathcal{U}}|\lambda$ of uniform convergence on the saturation family λ , coincides with the set-open topology on $C(X, Y)$. For every Y^2 -compact space X and any uniform space (Y, \mathcal{U}) , the topology on $C(X, Y)$, induced by the uniformity $\hat{\mathcal{U}}$ of uniform convergence, coincides with the Y -compact-open topology on $C(X, Y)$ and depends only on the topology induced on Y by the uniformity \mathcal{U} . In particular, for every pseudocompact space X and any metrizable topological vector space Y with uniform \mathcal{U} , the topology on $C(X, Y)$, induced by the uniformity $\hat{\mathcal{U}}$ of uniform convergence, coincides with the C -compact-open topology on $C(X, Y)$ (with the compact-open topology on $C(\nu X, Y)$ where νX is the Hewitt realcompactification of X) and depends only on the topology induced on Y by the uniformity \mathcal{U} . It is also shown that in the class of closed-homogeneous complete uniform spaces Y , a necessary condition for coincidence of topologies is Y -compactness of the elements of the family λ .

1. INTRODUCTION

Let X be a Hausdorff space and let (Y, \mathcal{U}) be a uniform space. We shall denote by $C(X, Y)$ the set of all continuous mappings of the space X to the space Y , where Y is equipped with the topology induced by \mathcal{U} . For every

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