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**Relationships between inclusions for relations and inequalities for corelations.** (English)

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Summary: Let $X$ and $Y$ be quite arbitrary sets. Then, a function $U$ on the power set $\mathcal{P}(X)$ to $\mathcal{P}(Y)$ will be called a corelation on $X$ to $Y$. Thus, complementation and closure (interior) operations on $X$ are corelations on $X$.

Moreover, for any two corelations $U$ and $V$ on $X$ to $Y$, we shall write $U \leq V$ if $U(A) \subseteq V(A)$ for all $A \subseteq X$. Thus, the family of all corelations on $X$ to $Y$ also forms a complete poset (partially ordered set).

Formerly, we have established a partial Galois connection $(\triangleright, \triangleleft)$, between relations and corelations. Now, by using this, we shall establish some further relationships between inclusions for relations and inequalities for corelations.

For instance, for some very particular corelations $U$ and $V$ on $X$ to $Y$, with $U^{\triangleleft} \leq V^{\triangleleft}$, we shall prove the existence of an union-preserving corelation $\Phi$ on $X$ to $Y$ which separates $U$ and $V$ in the sense that $U \leq \Phi \leq V$ .

**MSC:**

06A15 Galois correspondences, closure operators (in relation to ordered sets)
54C60 Set-valued maps in general topology



**Keywords:**

relations; setfunctions; Galois connections