



HITS

Heidelberger Institut für
Theoretische Studien

Knowledge Discovery Interest Group
virtual IVOA interop meeting Sydney

Symmetry: $\Delta(A, B) = \min\{d(A, \phi(B)) \mid \phi \in \Phi\}$
 $= \min\{d(\phi(B), A) \mid \phi \in \Phi\}$ by symmetry of d
 $= \min\{d(B, \phi^{-1}(A)) \mid \phi \in \Phi\}$ because of [A3]
 $\geq \Delta(B, A)$

Triangular

with $\phi_a = \operatorname{argmin}_{\phi \in \Phi} \{d(A, \phi(C))\}$ and $\phi_b = \operatorname{argmin}_{\phi \in \Phi} \{d(C, \phi(B))\}$

The same value we get $\Delta(B, A) \geq \Delta(A, B)$ which completes this step.

ϕ with $d(A, \phi(B)) = 0$ and thus $A = \phi(B)$ (i.e., $A \sim B$) because d is a metric.

$\Delta(A, B) = 0 \rightarrow A \sim B$, because $\Delta(A, B) = 0$ implies that there exists a $\phi \in \Phi$ such that $d(A, \phi(B)) = 0$ and thus $A = \phi(B)$ (i.e., $A \sim B$) because d is a metric.

Future of Science Platforms

Discussion: is the VO a digital plate archive or an observatory?

- machine learning analysis is building telescopes/instruments for a virtual sky
 - machinery of discovery shifts from instruments to computers
 - should astronomers have all the skill or should they be part of teams
- tables are great but how to do data-science on images, spectra, cubes, time-series
 - we have standards defined, but what to do if a corresponding service is not provided
 - polymorphic data-access / HiPS
 - storage of uncertainties
- are science platforms a solution? how do we standardize those? how to exchange “APPS”? how to orchestrate? program everything in python?