Some New Investigation of Pansystems Methodology
to Combinatorics, Fuzzy Transformation and
Dynamic Programming

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Pansystems methodology is a transfield investigation and
applications of generalized system-transformation-symmetry
in things mechanism. It deals with some problems in combi-
natorics, fuzzy mathematics, operations research and other
subjects from new viewpoints and presents some new methods.

Using semi-equivalent (or tolerant) relation, pansystems
methodology studies some new properties of difference-identity
relation. The elements satisfied the semi-equivalent relation
belong to the same block. Pansystems clustering consists of
all blocks. Thus, a semi-equivalent relation corresponds to
a new type of fuzzy partition. Köning system is a family of
subsets that the maximal point-independent number equals
the minimal block-covering number, and the well-known Dilw-
orth's theorem says every poset has König property. There
are some examples to show the differences between pansystems
clustering and König system, and some conditions of equiva-
lence of them are found. Menger system is a family of
subsets that the maximal block-independent number equals
the minimal point-covering number. When a semi-equivaent
relation is deduced by a partial ordering, the pansystems
clustering is a Menger system, which extends a result
obtained by Zhu Xuding. After introducing operation between
two semi-equivalent relations, we give an example to illu-

strate Menger property is not of conservative under the operation. If G is a complete ordered set, G' is a n-pansystems simulation, then the pansystems clustering on GXG' is still a Menger system. Especially, when $|G|=1$, $n=2$, it is the well-known Hall's theorem in combinatorics.

Pansystems methodology also dicusses some problems in fuzzy mathematics. We apply fixed pansystems theorems to investigate when a fuzzy transformation has a nonzero eigen-fuzzy sets, and many necessary conditions and suff-icientccoditions are obtained. If the diagonal has a non-zero element, the fuzzy transformation must have a nonzero eigen-fuzzy set, whether G is finit or infinite. When G is finit, necessary and sufficient condition is also obtained . Furthermore the properties of nonzero eigen-fuzzy set are investigated, and results obtained by Lin Luduan are extended.

Using the transformations of pansystems relations to study dynamic programming, mang good results have been obtained: Wu Xuemou obtains the principle of embodiment conservations, Wu Shouzhi proves generalized principle of optimality, Qin Guoguang develops pansystems operation projection principle , Wang Ming also obtains mang results. They extend, implement and develop Bellman's principle and Qin Yuyuan's jar-metric principle. We continue their work, and investigate the relations among their results.