Abstract

The concepts of $indX, IndX, dimX$ *for a topological spaces* X *have been well studied. In this work, these concepts will be extended by using* $N-$ *open sets to define* $N-indX, N^{*}-indX,\ N-\ IndX, N^{*}-IndX, N^{**}-IndX, N-dimX,$ $N^{*}-dimX$. *Then the relations among them and other concepts will be studied like* NT_1 *–space,* NT_2 *–space,* $N-regular$ *space,* $N^{*}-regular$ *space,* $N^{**}-regular$ *space,* $N-normal$ *space,* $N^{*}-normal$ *space,* $N^{**}-normal$ *space ,* $N-paracompact$ *space,* $N-bicompact$ *space . The behavior of these invariants will be studied under certain kinds of maps. The following are some of the main results:*

1. *If* X *is* $N-paracmopact\ Hausdorff$ *space, then* X *is* $N^{**}-regular$ *space.*
2. *If* X *is a* $N-perfectly\, zero$ *–dimensional space, then* X *is* $N-paracmopact$ *space and* $N-dimX=0$.
3. *If* $f{:}\,X\longrightarrow Y$ *is a* $continuous$ $N-closed$ *surjection mapping and* X *is a* $normal$ *space, then* Y *is* $N-normal$ *space.*
4. *The following statements about a space* X *are equivalent:*
   1. $N-dimX\leq n$.
   2. *The* $N-vague\ order$ *of identity mapping* I_x *of* X *is at most* n.
   3. *The* $N-vague\ order$ *of every* $N-continuous$ *surjection with range* X *is at most* n.

5. *The following statements about a space* X *are equivalent:*

   1. $N^{*}-dimX\leq n$.

2. The $N^* - vague\ order$ of identity mapping I_x of X is at most n.
3. The $N^* - vague\ order$ of every $N^* - continuous$ surjection with range X is at most n.

6. If X is $normal$ space, Y is a T_1 −space and $f: X \longrightarrow Y$ is an $N - closed$ $continuous$ $open$ surjection mapping such that $N - indf^{-1}(y) = 0$ for each y is $f(x)$, then f is an $N - decomposing$ mapping.
7. For any space X, then $N - locindX = N^* - indX$.
8. If X is an $N^* - regular$ space, then $N^* - indX \leq N - locIndX$.
9. If X is an NT_1 − space, then $N^* - indX \leq N - locIndX$.
10. If X is an $N^{**} - normal$ space, then $N - locdimX \leq N - locIndX$.
11. If A is an $N - closed$ set of a space X, then:
    1. $N - locdimA \leq N - locdimX$.
    2. $N - locIndA \leq N - locIndX$.
12. If Y is an $N - open$ set of an $N^{**} - regular$ space X, then:
    1. $N - locdimY \leq N - locdimX$.
    2. $N - locIndY \leq N - locIndX$.