

A **Smarandache Strong Structure** on a set S means a structure on S that has a proper subset P with a stronger structure.

By *proper subset* of a set S , we mean a subset P of S , different from the empty set, from the original set S , and from the idempotent elements if any.

In any field, a *Smarandache strong n -structure* on a set S means a structure $\{w_0\}$ on S such that there exists a chain of proper subsets $P_{n-1} < P_{n-2} < \dots < P_2 < P_1 < S$, where ' $<$ ' means 'included in', whose corresponding structures verify the inverse chain $\{w_{n-1}\} > \{w_{n-2}\} > \dots > \{w_2\} > \{w_1\} > \{w_0\}$, where ' $>$ ' signifies 'strictly stronger' (i.e., structure satisfying more axioms).

And by *structure* on S we mean the strongest possible structure $\{w\}$ on S under the given operation(s).

As a particular case, a *Smarandache strong 2-algebraic structure* (two levels only of structures in algebra) on a set S , is a structure $\{w_0\}$ on S such that there exists a proper subset P of S , which is embedded with a stronger structure $\{w_1\}$.

For example, a **Smarandache strong semigroup** is a semigroup that has a proper subset which is a group.

Also, a **Smarandache strong ring** is a ring that has a proper subset which is a field.

Properties of Smarandache strong semigroups, groupoids, loops, bigroupoids, biloops, rings, birings, vector spaces, semirings, semivector spaces, non-associative semirings, bisemirings, near-rings, non-associative near-ring, binear-rings, fuzzy algebra and linear algebra are presented in the below books together with examples, solved and unsolved problems, and theorems.

Also, applications of Smarandache strong groupoids, near-rings, and semirings in automaton theory, in error correcting codes, in the construction of S -sub-biautomaton, in social and economic research can be found in the below e-books.

[International Conference on Smarandache Algebraic Structures](#), December 17-19, 2004, Loyola College, Madras, Chennai - 600 034 Tamil Nadu, India.

Program:

- 1) Smarandache type strong groupoids, semigroups, rings, fields;
- 2) Smarandache type strong k -modules, vector spaces, linear algebra, fuzzy algebra.

Organizer: Dr. M. Mary John, Head of Department of Mathematics

Book series:

- [Neutrosophic Rings, by W. B. Vasantha Kandasamy, F. Smarandache](#)
- [N-Algebraic Structures, by W. B. Vasantha Kandasamy, F. Smarandache](#)
- [Introduction to N-Adaptive Fuzzy Models to Analyze Public Opinion on AIDS, by W. B. Vasantha Kandasamy, F. Smarandache](#)
- **Smarandache Algebraic Structures, W. B. Vasantha Kandasamy: (**[Vol. I: Groupoids](#)**;** [Vol. II: Semigroups](#)**;** [Vol. III: Semirings, Semifields, and Semivector Spaces](#)**;** [Vol. IV: Loops](#)**;** [Vol. V: Rings](#)**;** [Vol. VI: Near-rings](#)**;** [Vol. VII: Non-associative Rings](#)**;** [Vol. VIII: Bialgebraic Structures](#)**;** [Vol. IX: Fuzzy Algebra](#)**;** [Vol. X: Linear Algebra](#)**)**
- [A Study of New Concepts in Smarandache Quasigroups and Loops, by Jaiyeola Temitope Gbolahan](#)

Article:

- [R. Padilla's editing](#)
-

See also:

- [Smarandache Weak Structures](#)
- [Smarandache Strong-Weak Structures](#)