1. Record Nr. UNINA9911006691203321

Autore	IAEA
Titolo	Development of Steady State Compact Fusion Neutron Sources
Pubbl/distr/stampa	Vienna : , : International Atomic Energy Agency, , 2022 ©2022
ISBN	9781523149803 1523149809 9789201226228 9201226225
Edizione	[1st ed.]
Descrizione fisica	1 online resource (122 pages)
Collana	IAEA TECDOC Series No ; ; v.1998
Disciplina	621.484
Soggetti	Controlled fusion
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	1. INTRODUCTION -- 1.1. BACKGROUND -- 1.2. OBJECTIVE -- 1.3. SCOPE -- 1.4. STRUCTURE -- 2. SUMMARY OF THE WORK DONE DURING THE CRP -- 2.1. Compact Neutron Source Design activities -- 2.2. Physics Basis for Steady-State Compact Fusion Neutron Sources -- 2.3. Mirror Machine Fusion Neutron Source Designs -- 2.4. Dense Plasma Focus Neutron Source Designs -- 3. IMPACT of the coordinated research project on compact fusion neutron sources research and development -- 4. RELEVANCE of the coordinated research project results -- 5. CONCLUSIONS -- REFERENCES -- THE ST40 HIGH FIELD SPHERICAL TOKAMAK: DESIGN AND PRELIMINARY RESULTS -- PHYSICS DESIGN STUDIES ON COMPACT NEUTRON SOURCE BASED ON THE TOKAMAK CONFIGURATION -- A PRELIMINARY STUDY ON THE SYSTEM PARAMETERS OF A SPHERICAL TOKAMAK FOR A VOLUME FUSION NEUTRON SOURCE -- PLAN AND PROGRESS OF THE NEUTRON SOURCES DEVELOPMENT FOR FUSION APPLICATIONS AT KAERI -- DEVELOPMENT OF FAST PARTICLE PHYSICS BASIS FOR COMPACT STEADY-STATE FUSION NEUTRON SOURCES -- PROGRESS OF THE STEADY-STATE GDT BASED FUSION NEUTRON SOURCE -- COIL DESIGN FOR THE STRAIGHT FIELD LINE MIRROR -- NEUTRON SOURCE BASED ON GAS-DYNAMIC TRAP: EXPERIMENTAL RESULTS IN SUPPORT THE CONCEPT --

DEVELOPMENT OF STEADY-STATE COMPACT FUSION NEUTRON SOURCES BASED ON STELLARATOR-MIRROR AND MIRROR PLASMA TRAPS -- DEVELOPMENT OF QUASI STEADY STATE (REPETITIVE) COMPACT NEUTRON SOURCE BASED ON PLASMA FOCUS CONCEPT -- LIST OF ABBREVIATIONS -- CONTRIBUTORS TO DRAFTING AND REVIEW

Sommario/riassunto

"Fusion neutron sources have many important practical uses, such as irradiation testing of materials and components, facilitating the production of various isotopes such as tritium, driving subcritical cores, characterizing spent nuclear fuel, and manufacturing medical isotopes. All these applications can be potentially improved by achieving higher neutron yields and fluxes in compact fusion neutron sources (CFNSs). This publication is a compilation arising from an IAEA coordinated research project on this topic and presents the project's main results and findings with the aim of supporting stakeholders in the development of CFNSs in the transition from conceptual to engineering design."--