

## THE SUN MAGNETIC FIELD SECRETS

All matter in the Sun is in the form of gas and plasma because of its high temperatures. This makes it possible for the Sun to rotate faster at its equator (about 25 days) than it does at higher altitudes (about 35 days near its poles). **Proton/Neutron (P/N)** interaction in the core creates reversible an 11-year solar cycle of magnetic activity as the Sun's magnetic field reverses itself about every 11 years.

The optical surface of the Sun (the photosphere) is known to have a temperature of approximately 6,000K. When observing the Sun with appropriate filtration, the most immediately visible features are usually its sunspots, which are well-defined surface areas that appear darker than their surroundings because of lower temperatures. Sunspots are regions of intense magnetic activity where charged particles show natural chaos of the spots magnetic fields H-lines. Nuclear reactions in the interior of the main spots and multi-stage separated compact spot masses into convection zone produces active regions that are the source of intense solar protuberances, flares and coronal mass ejections. The largest sunspots can be tens of thousands of kilometers across.

The number of sunspots visible on the Sun is not constant, but varies over an 11-year cycle known as the Solar cycle. At a typical solar minimum, few sunspots are visible, and occasionally none at all can be seen. Those that do appear are at high solar latitudes. As the sunspot cycle progresses, the number of sunspots increases and they move closer to the equator of the Sun. Sunspots usually exist as pairs with opposite magnetic polarity formed by downwarping arcs of splitted main spot-streams from main stream of SDN. They are splitted within the convection zone. Leading sunspot changes magnetic polarity within every solar cycle. Bending of the split elastic spot is very interesting and understandable. Disappear of the spots closely connected to the violent  $\gamma$ -process inside and permanently nuclear reactions and ejections (nuclear wind).

The solar cycle has a great influence to the Earth's climate. Solar activity minima tend to be correlated with colder temperatures, and maxima of the solar activity tend to be correlated with hotter temperatures. In the 17th century, the solar cycle appears to have stopped entirely for several decades; very few sunspots were observed during this period. During this era, which is known as the Maunder minimum or Little Ice Age, Europe experienced very cold temperatures.\* Earlier extended minima have been discovered through analysis of tree rings and also appear to have coincided with lower-than-average global temperatures. It was connected to the neutron corks on the magnetic poles.

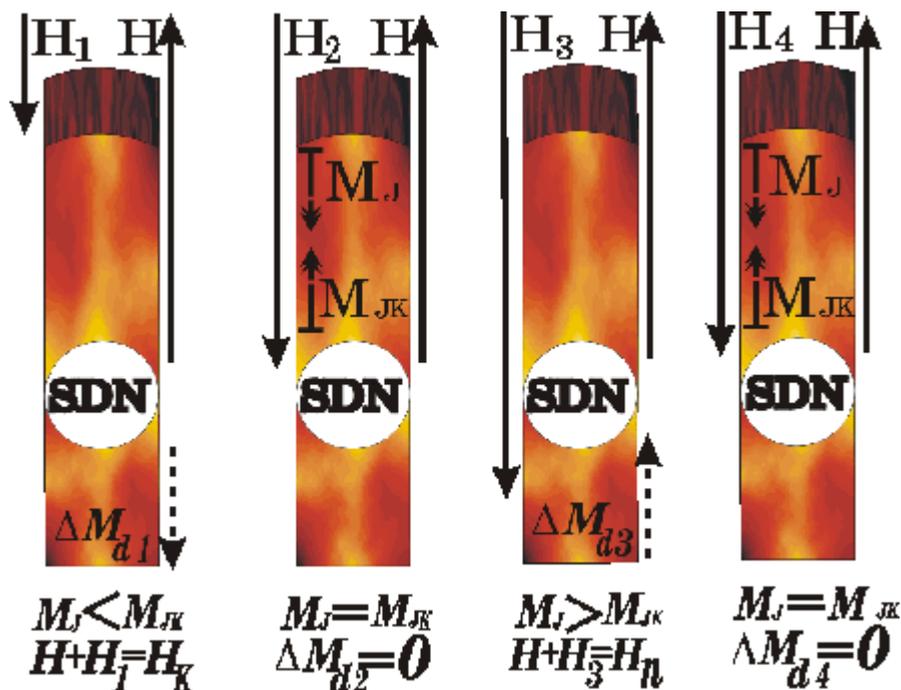
\* Lean, J.; Skumanich A.; White O. (1992). "Estimating the Sun's radiative output during the Maunder Minimum". *Geophysical Research Letters* 19: 1591-1594.

Sun has own fiery core - SDN. There's a huge temperature in the core. The core is considered to extend from the center to about 0.2 solar radii. It has a density of up to 150,000 kg/m<sup>3</sup> (150 times the density of water on Earth) and a temperature of close to 13,600,000 kelvin. Helium is not into SDN, it's impossible. There are rapid changeable protons and neutrons only. Usually larger normal star has heavier SDN and stronger magnetic field. Strength of the magnetic field is connected to the size of a core.

There is about 4,000°C on the surface most "cold" parts of the Sun, within a spot surface. They have own magnetic field - inner concentrated H-lines installed by SDN. The gaseous masses of Sun-spots have higher temperature in the interior down-warping spots and violent nuclear reaction. All iron isotopes in the shell have high nuclear stability and collectively to the other particles produce magnetic field within turbulent convection streams of the shell, around SDN. The solar nucleus (core) has changeable magnetic field and connected to the permanently **P/N** changing there. Neutrons and protons are in an excited state in the core. SDN has colossal temperature. About 98% of the Sun's mass is accumulated there. In such temperature conditions (13,600,000 kelvin) process of turning protons in neutrons and vice versa are permanent violent process. Deuterium isn't into SDN it's impossible. Deuterium can be formed temporary to the core's surface only. Between Sun's hemispheres the 22-24 year period of magnetic fields changing occurs. The serious declination from that period takes place as well. There's around the thermonuclear reaction zone huge radiative zone (**ray-energy transfer zone - thermonuclear wind zone**). The huge thermonuclear wind produces shell of the Sun. Upper layer of the shell is the visible surface.

The SDN of Sun is under influence of magnetic field made by the convection stream zone. Let's mark it with H. Difficult turbulent movement of convection streams and its charged particles around SDN

collectively produce magnetic field of the shell. Trajectories of particles are alike of the Archimedean drill. The complex turbulent movement produces strong magnetic field. Let's consider  $H$  as a slightly changeable value.

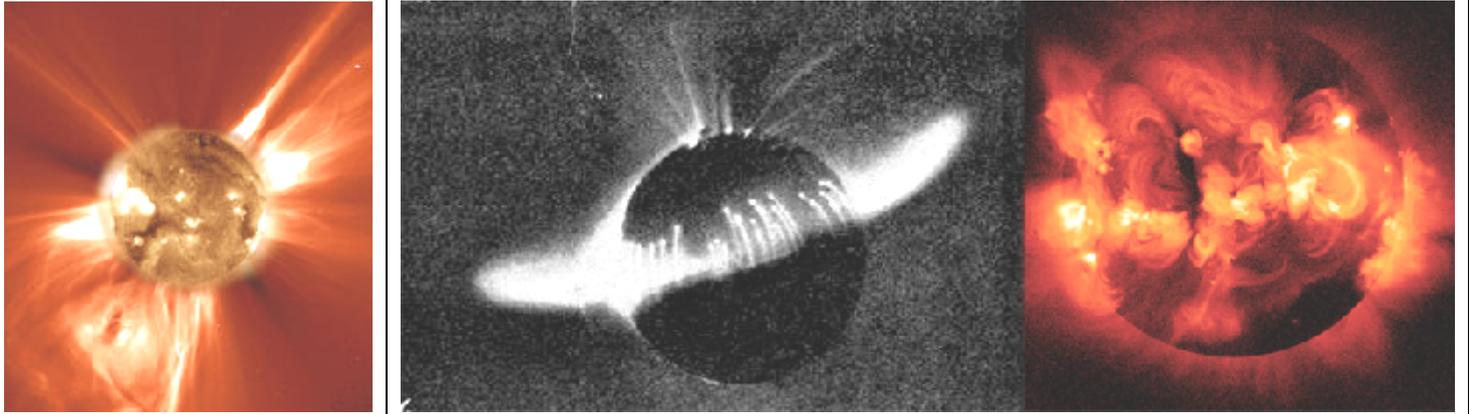


Slowly oscillation of Convection streams magnetic field –  $H$  produces greatly effects within the SDN and connected to the different velocities between altitudes. The equatorial belt zones of turbulent convection streams movement is much faster than high altitudes. The convection streams magnetic dipole and magnetic dipole of the SDN are located on the same axis. Periodic changes of Sun's magnetic poles and coincidence of magnetic and geographical poles could be decoded, if we assume SDN consists of protons and neutrons only. This refers only of super-dense masses. Magnetic changing within SDN connected to the temporally atoms of hydrogen and to the violent  $P/N$  changing as well as orbiting directions of electrons. Temporary hydrogen atoms have paramagnetic features around SDN. Into SDN this is almost impossible. There is so violent  $P/N$  changing temporary hydrogen particles can not produce magnetic field. Violent  $P/N$  changing can't form hydrogen molecules, this is impossible. Violent  $P/N$  changing produces triggering protons around SDN, triply– –process on the poles and thermonuclear reactions around main surface. Even deuterium's existence impossible there and Magnetic changes connected to the changeable temporal hydrogen atoms only. Hydrogen molecule has diamagnetic features, because there's balanced magnetic momentums. Existence of hydrogen and helium molecules into contradicts SDN interesting processes. SDN magnetic pole has permanently abundance of neutrons. Sometimes it fully covered by neutrons. Trigger of the carbon stream from pole needs expensive scientific researches. Carbon stream through radiative zone produces heavy nuclear stream by –bombardment. Violent –process within shell produces abundance of super-heavy nucleuses within the spot-streams. Spot's surface is enriched by light elements and its interior has abundance of heavy and super heavy elements and violent –process produces compact concentration of super heavy nucleuses, permanent explosions and multi-stage separation of main spots. Spending of protons by triply– –process within pole is more rapidly and produces permanently abundance of neutrons there. Triggering of protons into triply– –process by magnetic field is very interesting. This is closely connected to the orbiting direction of electrons around temporary protons. In one case SDN pole gravitate proton in second case triggers it into triply– –process. At the stage of neutron cork magnetic field can trigger penetrated protons into triply– –process.

From  $15,000^\circ C$  hydrogen starts ionization. In the conditions of very high temperature and density only the temporarily atoms of hydrogen produce magnetic field of SDN and its changing. Can the violent  $P/N$  changing into SDN produce changeable magnetic field? It needs expensive researches. Only the temporal hydrogen atoms take part in regulation of magnetic order of the SDN is conclusive evidence. Violent  $P/N$  process changes direction of summary magnetic field formed by temporary protons.

Figure (page 11) shows four stages: the first stage lasts within  $5.5 \div 6$  years. Activity on the Sun reaches the maximum by this time. The Sun magnetic field fully connected to the convection streams, because this stage is the maximum of magnetic field  $H_K$ , made by convection streams of the Sun.

Let's mark number of the Sun temporarily atoms of hydrogen around the SDN with  $n$ . We have to take into consideration that about 98% of the Sun is accumulated within SDN. Let's mark with  $H$  magnetic field formed by the convection streams of the Sun. Let's mark with  $M_{JS}$ , the sum of magnetic moments orientations to the south of SDN. Let's mark with  $M_{JN}$ , the sum of magnetic moments orientations to the North of SDN. Let's mark their sum with  $M_J$ .  $M_{JS} + M_{JN} = M_J$ . Let's mark with  $n$  the number of particles in SDN, magnetic moments sum equal to  $M_J$ . Let's mark by  $m$  the number of those particles which magnetic moments have balance to the each other. Let's mark the value of Sun's SDN magnetic field at the end of this stage by  $H_I$ .  $H_K$  is summery magnetic field. Let's mark with  $DM_{d1}$ , the summery induction magnetic moment formed by the total magnetic field. Let's mark with  $M_{JK}$ , magnetic moment of whole convection stream zones.



**Charged particles show chaotic magnetic palette formed by spots and its exploded masses**

Sun spot's main mass contains of light, heavy and super-heavy nucleuses and oxidized admixtures. They are a star-sized and source of embryonic proto-planetary gaseous masses objects on the parent star. Embryonic planets are formed after violent nuclear-synthesis reactions and huge nuclear explosion in the interior of starburst galaxy nucleus' shell. Each star and parent star is giant plasma diffuser which sorts atoms by mass and gaseous admixtures by density into main spots. Multi-stage separated spot masses always are invisible, have abundance of heavy and super-heavy elements and produce huge explosions within interior of the shell.

Each star's shell before inflation mainly is formed by thermo-nuclear wind inside. The violent nuclear-synthesis and explosion processes are sources of huge nuclear wind from the shell.