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THE VARIABILITY OF THIOL-DISULFIDE EXCHANGE IN SERUM ALBUMIN SOLUTION DURING PERIOD OF SOLAR ECLIPSE ON AUGUST, 11, 1999

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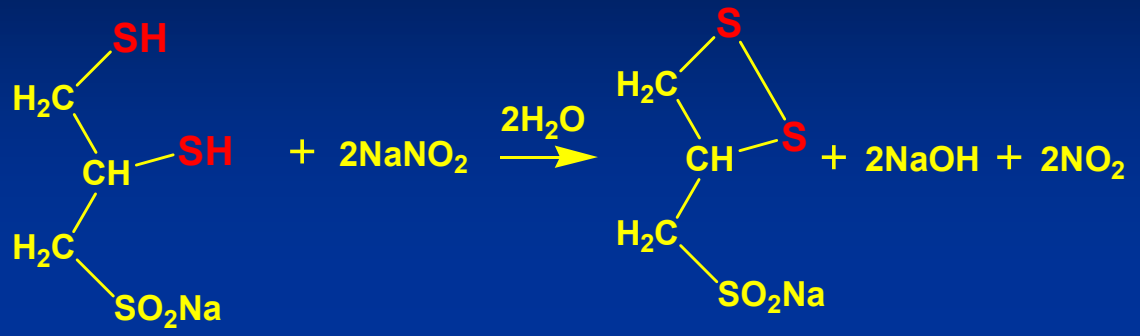
Historical aspects

Velocity of oxidation of sodium 2,3-dimercaptopropansufonate (unithiols)



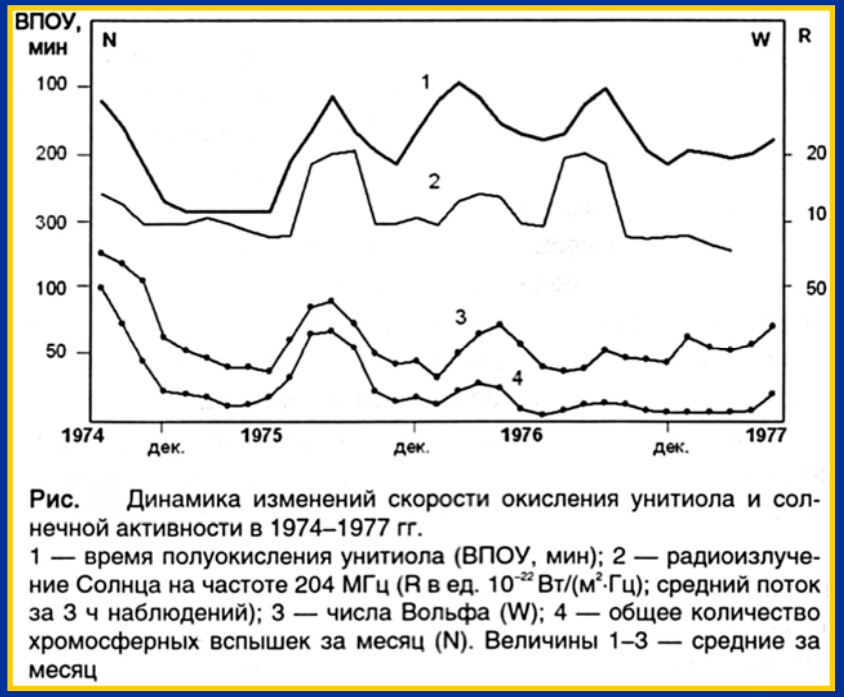


Рис. Динамика изменений скорости окисления унитиола и солнечной активности в 1974–1977 гг.
1 — время полуокисления унитиола (ВПОУ, мин); 2 — радиоизлучение Солнца на частоте 204 МГц (R в ед. 10^{-22} Вт/(м^2·Гц); средний поток за 3 ч наблюдений); 3 — числа Вольфа (W); 4 — общее количество хромосферных вспышек за месяц (N). Величины 1–3 — средние за месяц

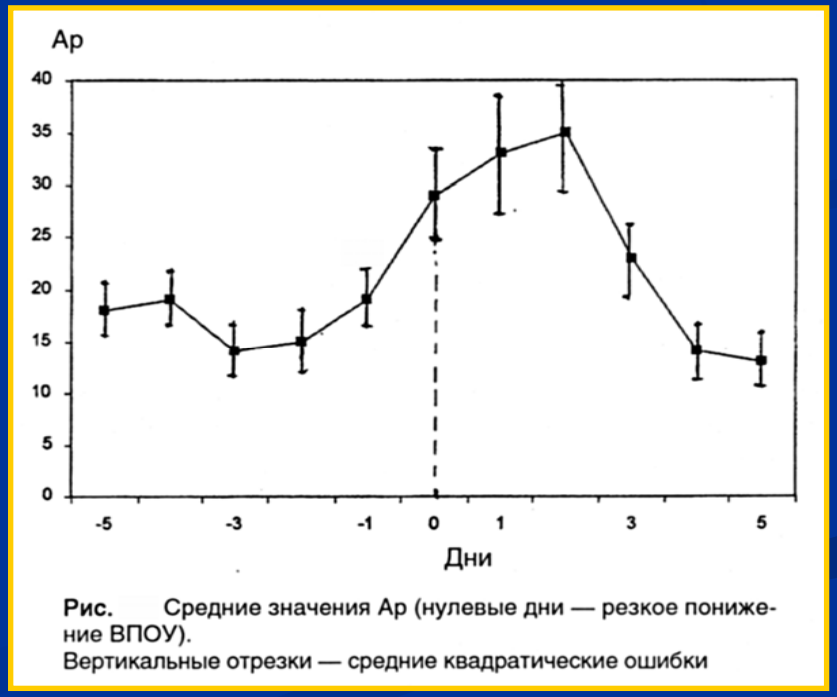
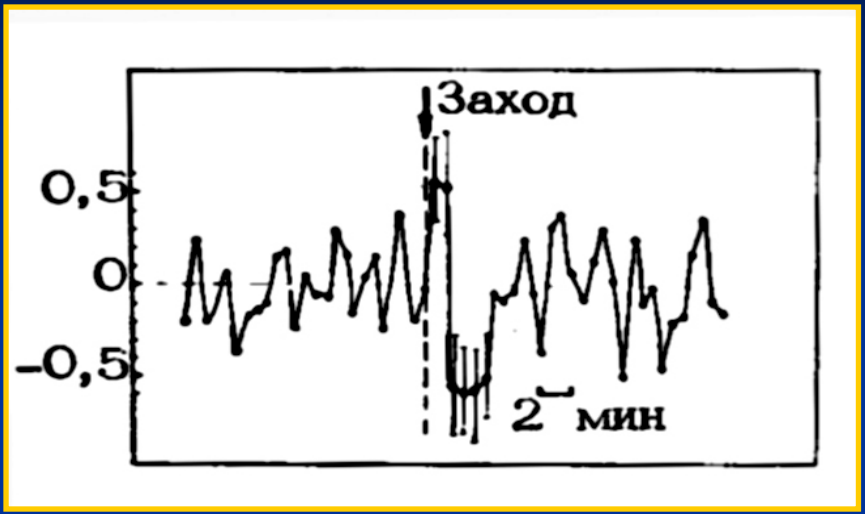


Рис. Средние значения Ap (нулевые дни — резкое понижение ВПОУ).
Вертикальные отрезки — средние квадратические ошибки

Sokolovsky V.V. (1976, 2008)

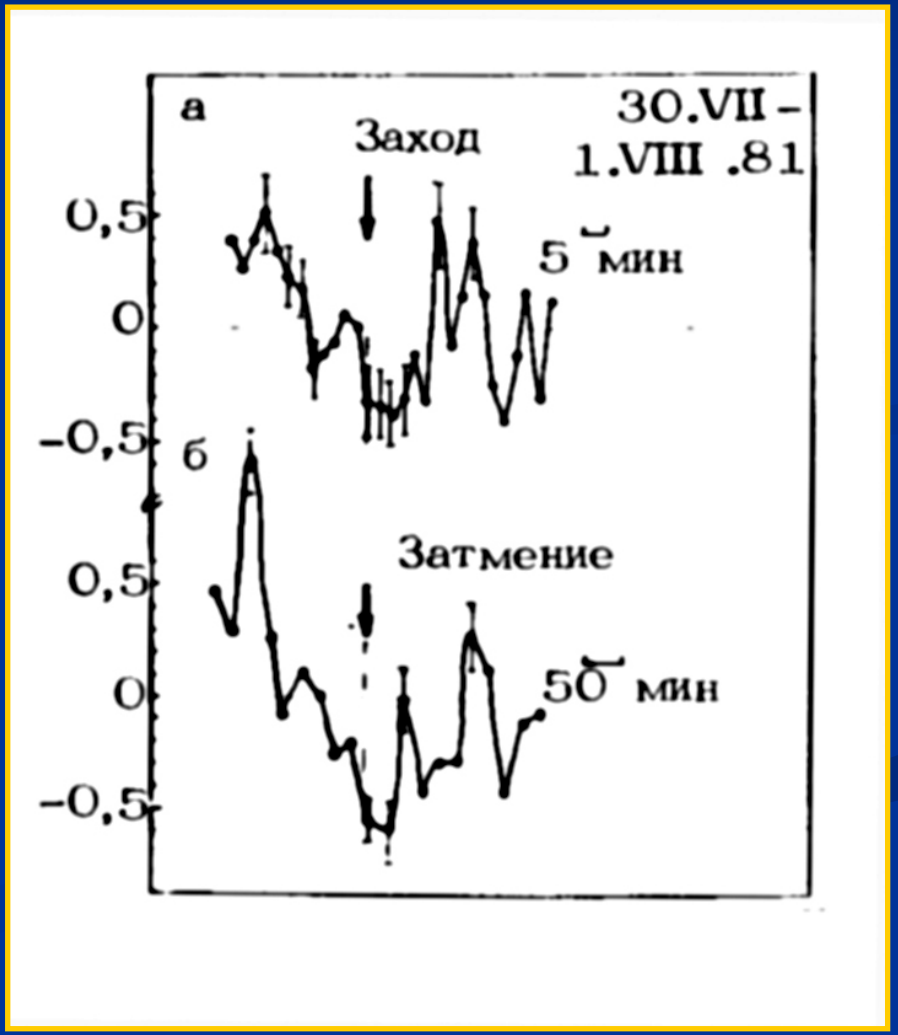
Historical aspects



Удальцова И В,
Коломбет В А,
Шноль С Э

Возможная космофизическая обусловленность макроскопических флуктуаций в процессах разной природы. Пущино: ОНТИ НЦБИ, **1987**. - с. 96

Velocity of oxidation of DCPIP



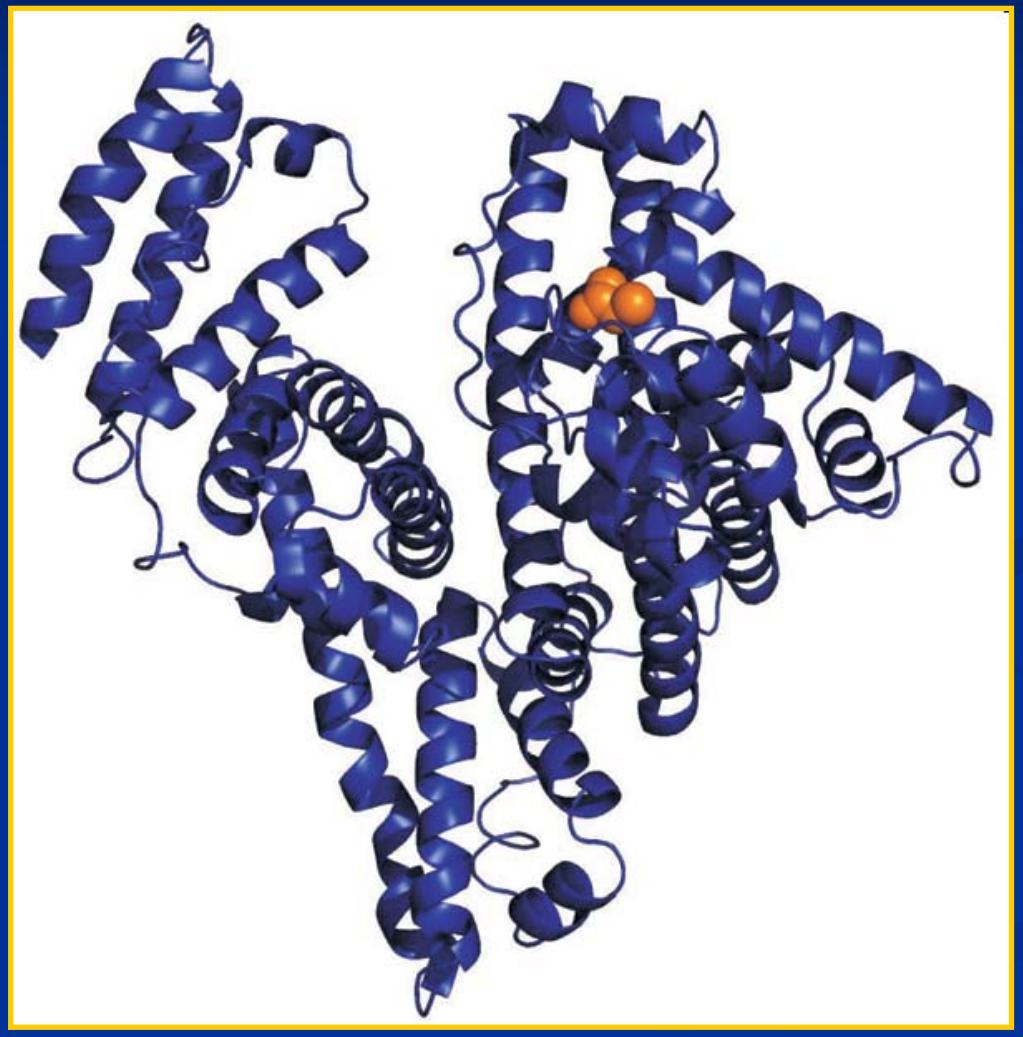
Sun eclipse 1999

Основные дни эксперимента *9.08.99 - 12.08.99*

Солнечное затмение было *11.08.99*, максимальная фаза затмения в *14:20*

Интенсивность затмения 73% для широты Симферополя (Крым, Украина).

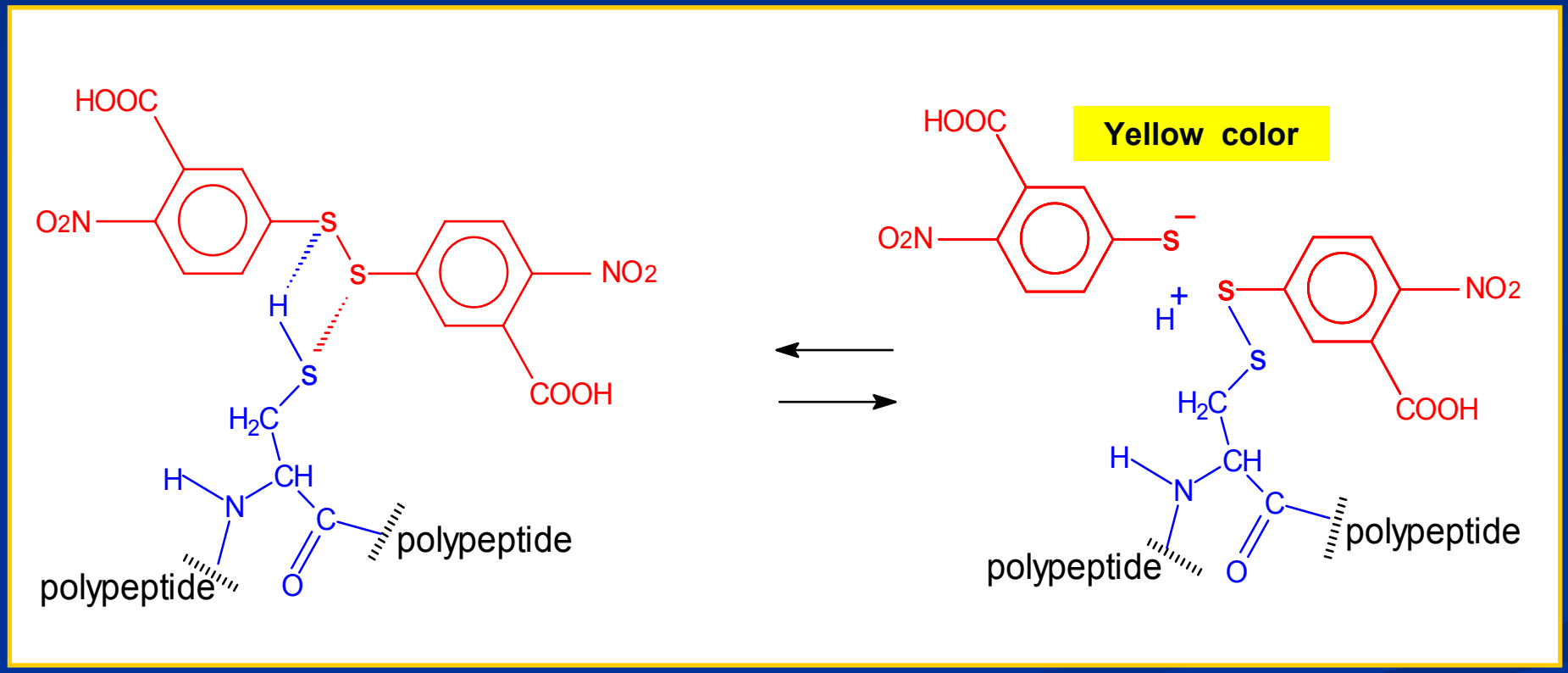
Serum albumin as the model thiol-disulphide exchange



3D structure of the human serum albumin

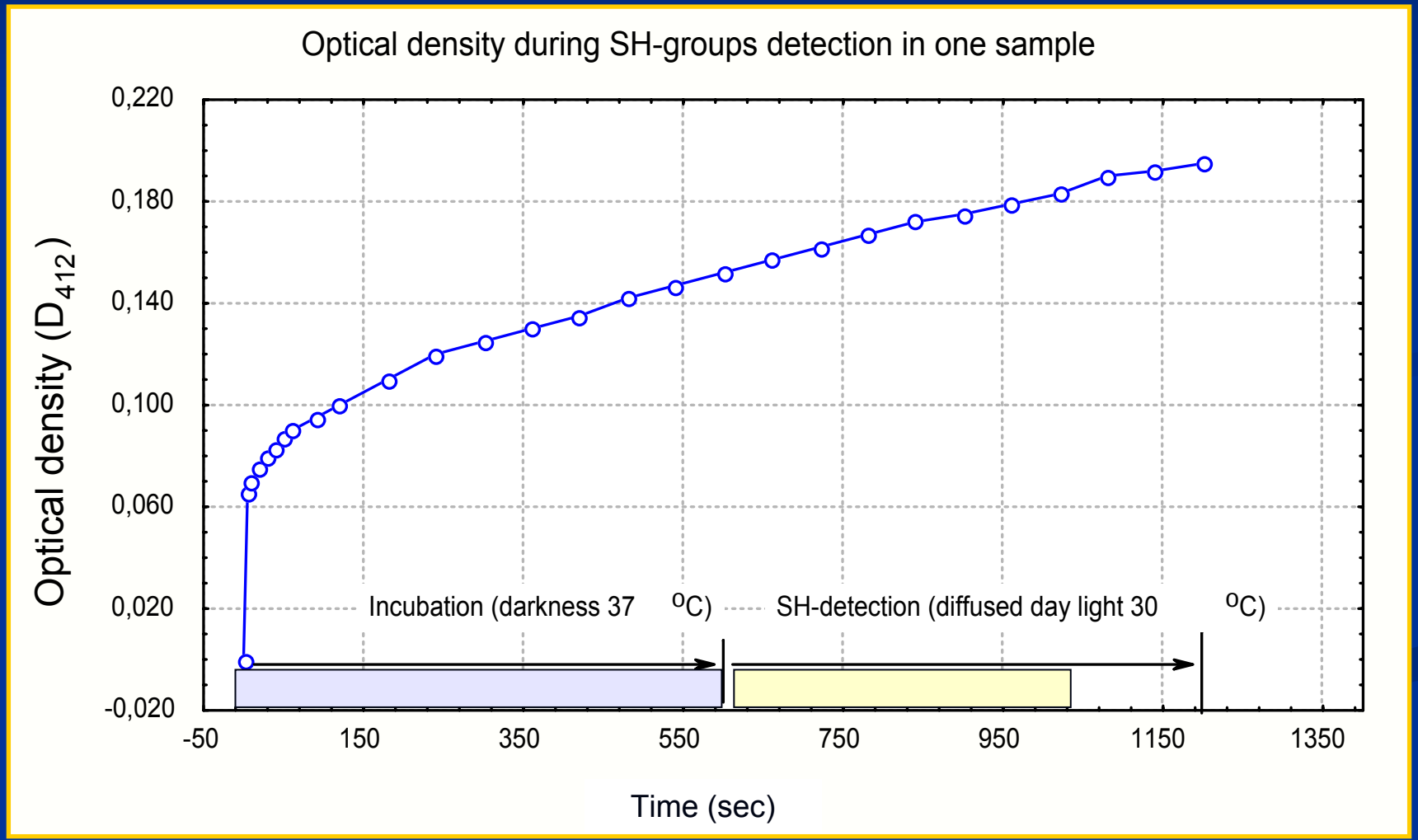
Serum albumin as the model thiol-disulphide exchange

Reaction of SH-groups of proteins with 5,5'-Dithiobis(2-nitrobenzoic acid)



Serum albumin as the model thiol-disulphide exchange

Optical detection of reaction of SH-groups of proteins with 5,5'-Dithiobis(2-nitrobenzoic acid)

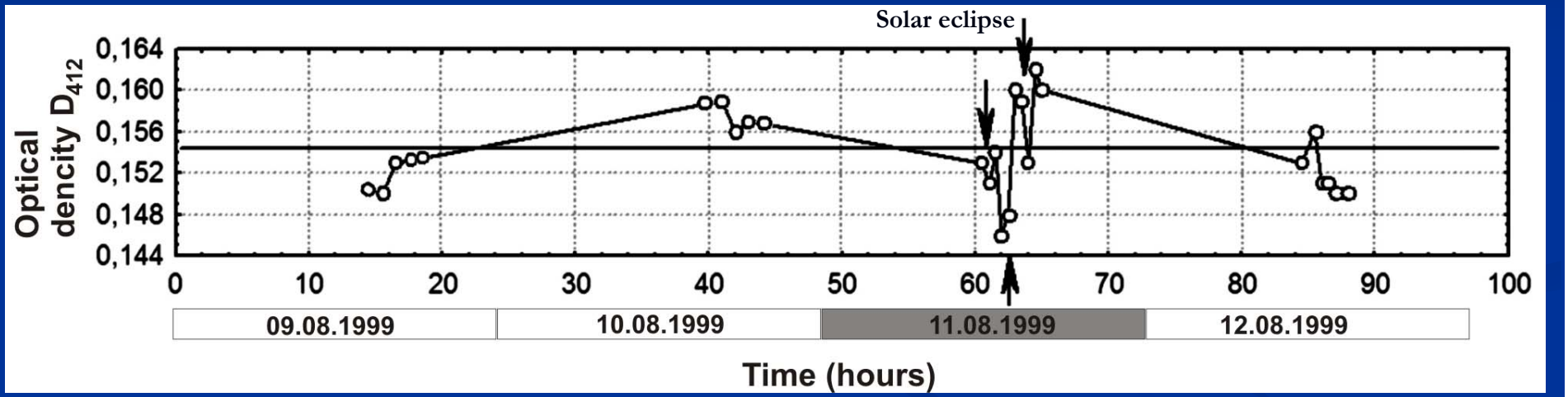


Serum albumin as the model thiol-disulphide exchange

Days of experiment	9.08.99 - 12.08.99
Eclipse (73% for Simferopol's latitude)	11.08.99 maximal phase at 14:20
Object of investigation:	Velocity of thiol-disulfide exchange in human serum albumin
Methods of detection:	1. Reaction human serum albumin solution (0.143 mcM/ml) with Elman's reagent (1.26 mcM/ml in 0.02 M tris-HCl pH=8.0) during 10 min of incubation under 37^0C in darkness. 2. Measurement of optical density of solution on 412 nm in light laboratory.
Statistics:	10 repeated measurements in each point
Geomagnetic Field Detection:	Few days before, during and after solar eclipse

Fluctuations of velocity of thiol-disulphide exchange

Reaction of SH-groups of proteins with 5,5'-Dithiobis(2-nitrobenzoic acid)
during period 09.08.1999 – 12.08.1999



Amplitude of fluctuations:

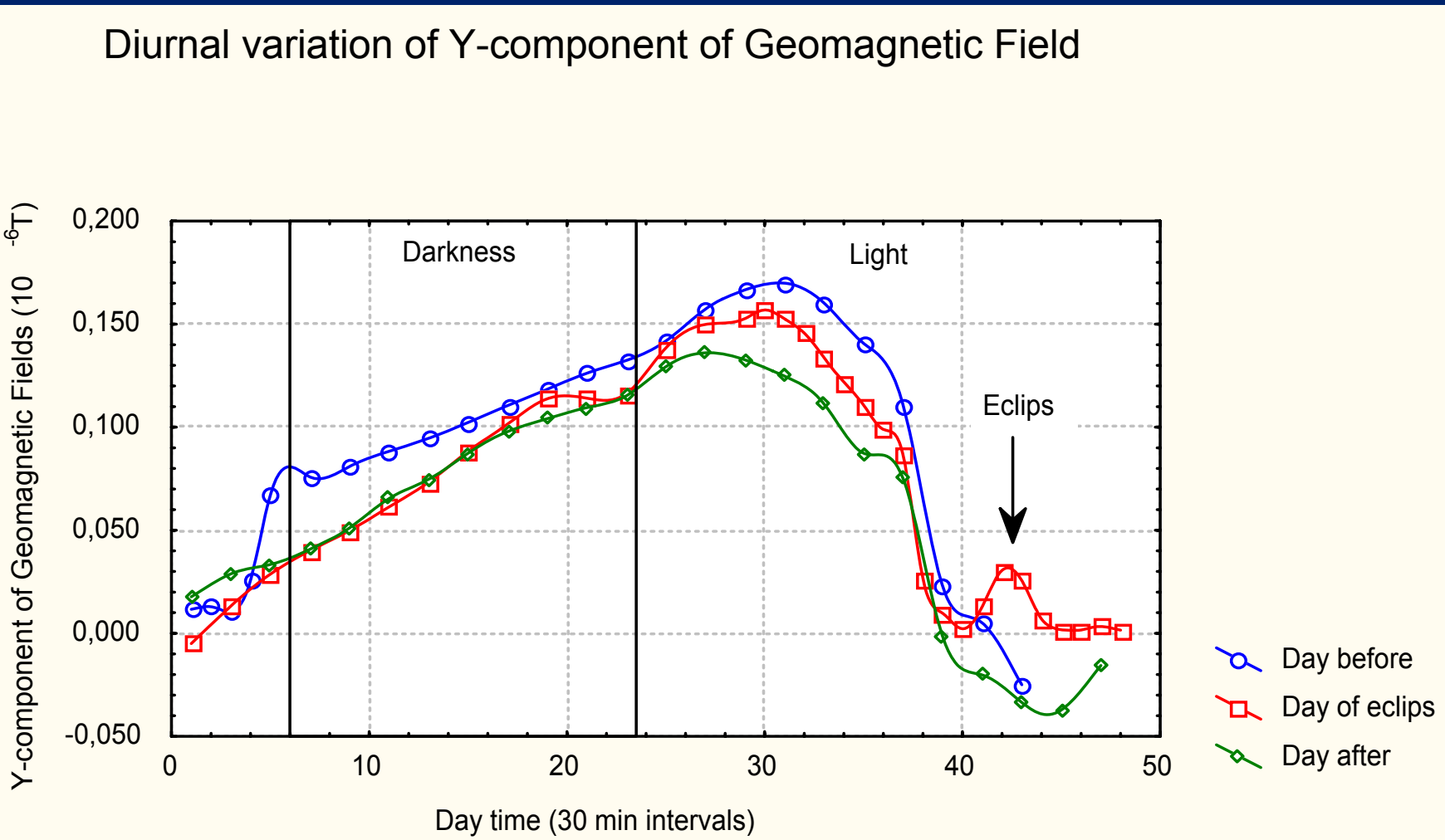
09.08.1999 : Δ(min-max) = 0,004 (2,5%) max (Δ/t) = 0,003

10.08.1999 : Δ(min-max) = 0,003 (1,9%) max (Δ/t) = 0,003

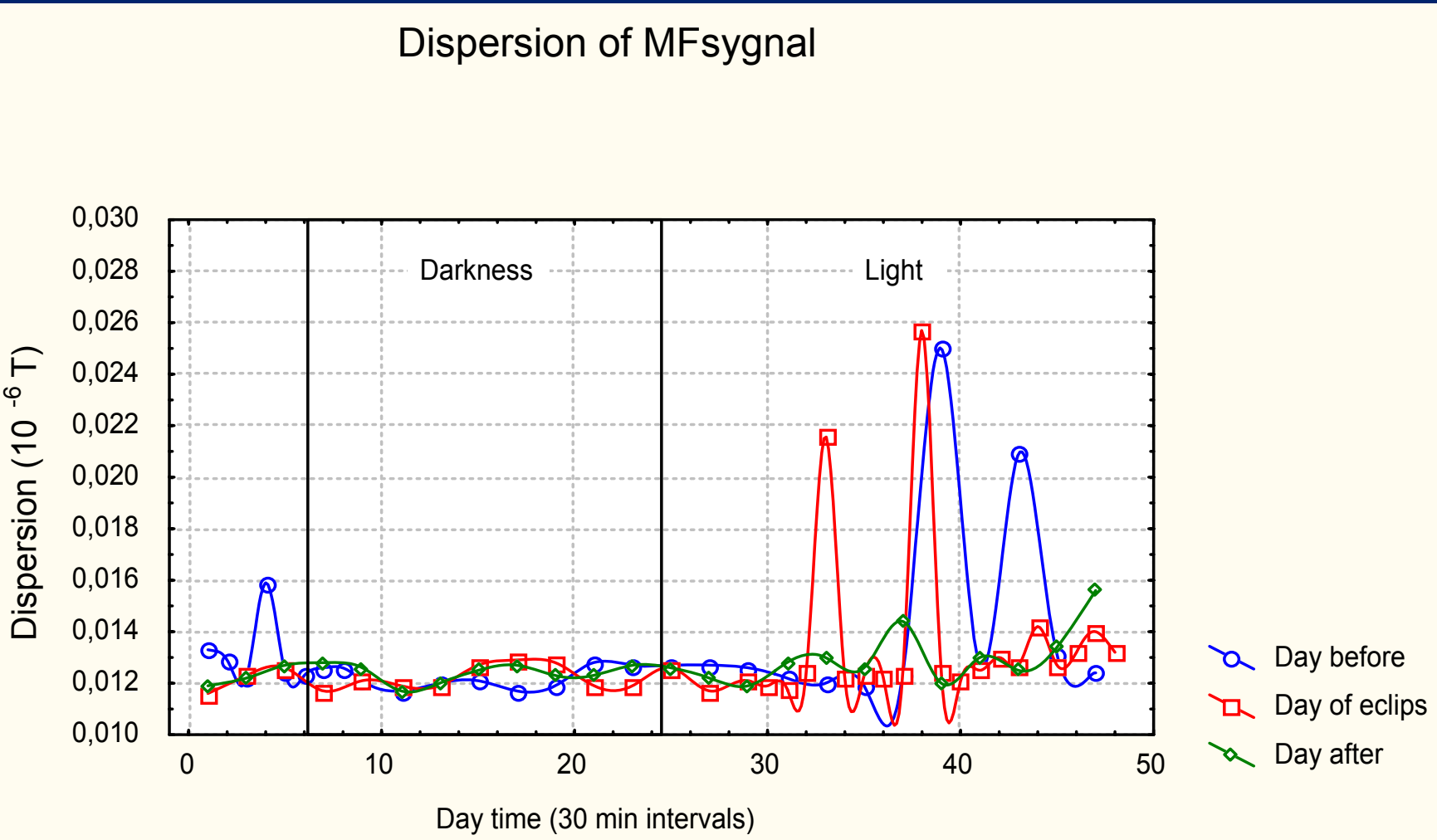
11.08.1999 : Δ(min-max) = 0,020 (13,2%) max (Δ/t) = 0,012

12.08.1999 : Δ(min-max) = 0,006 (3,9%) max (Δ/t) = 0,005

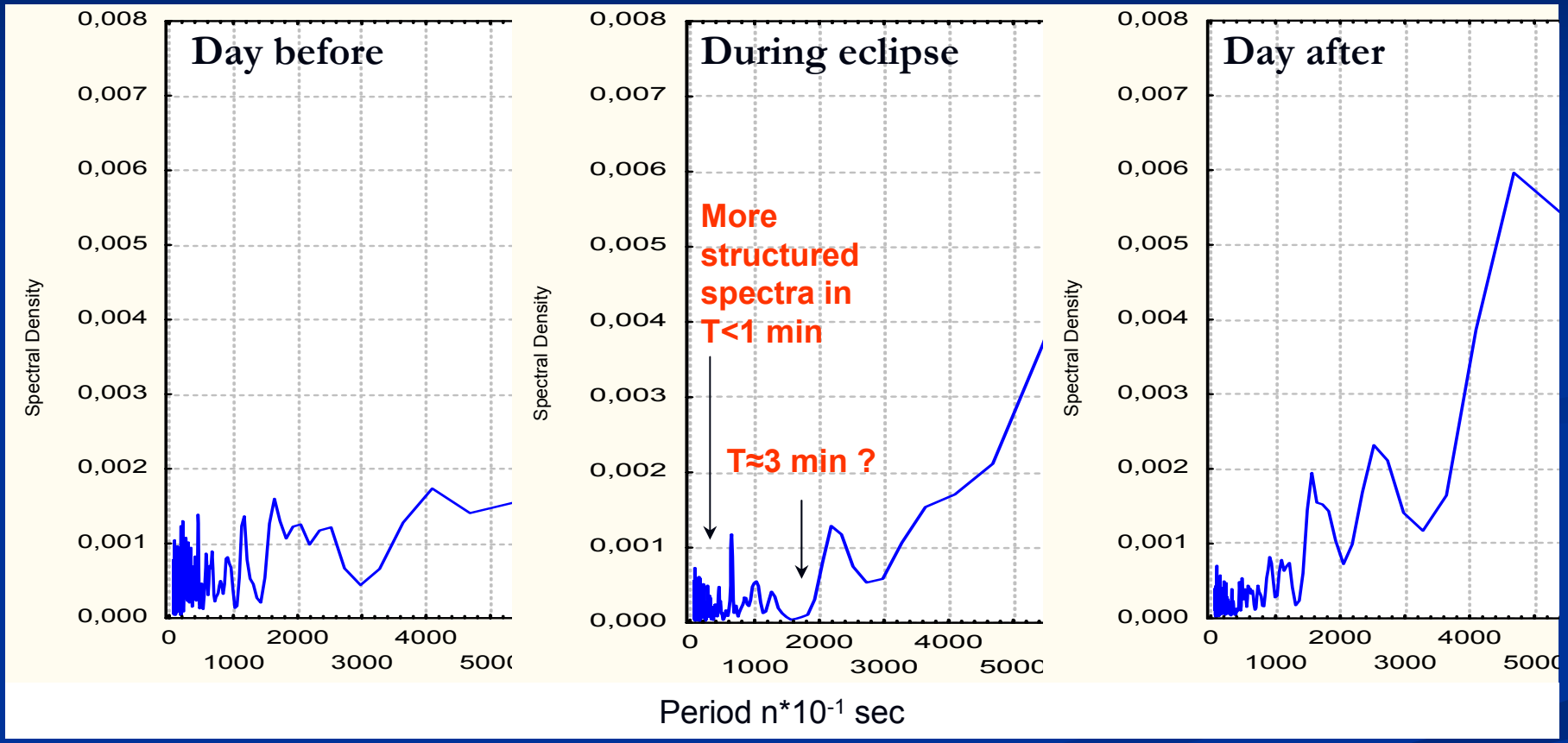
Geomagnetic field



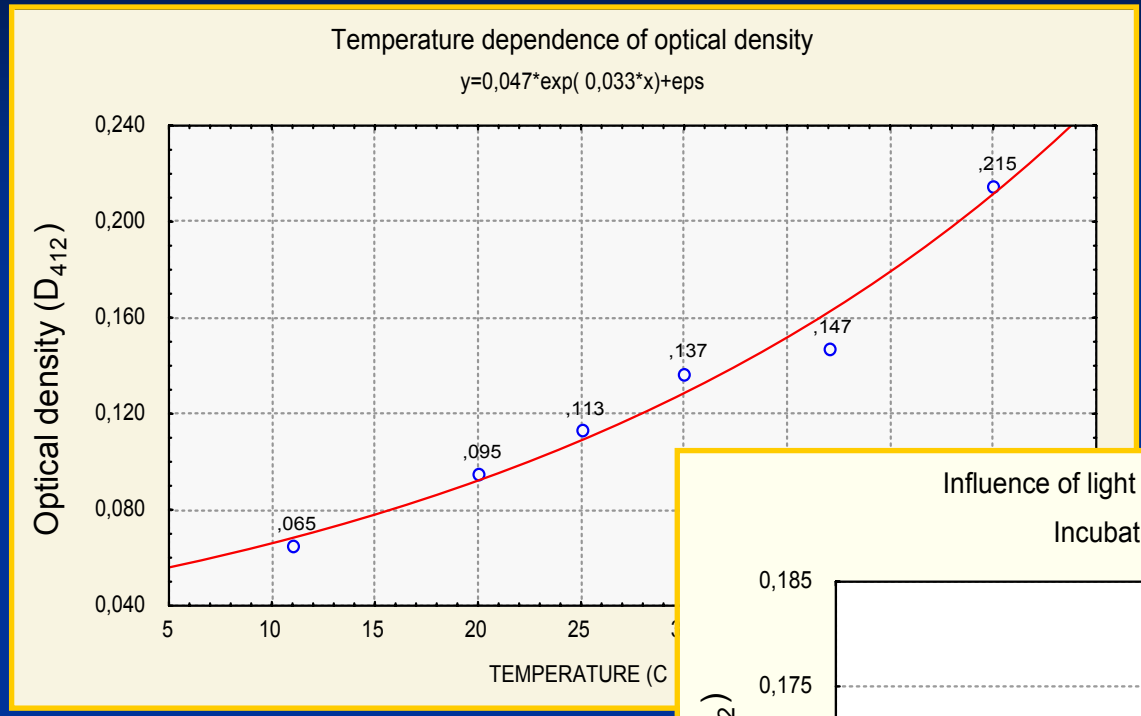
Extremely low frequency fluctuations



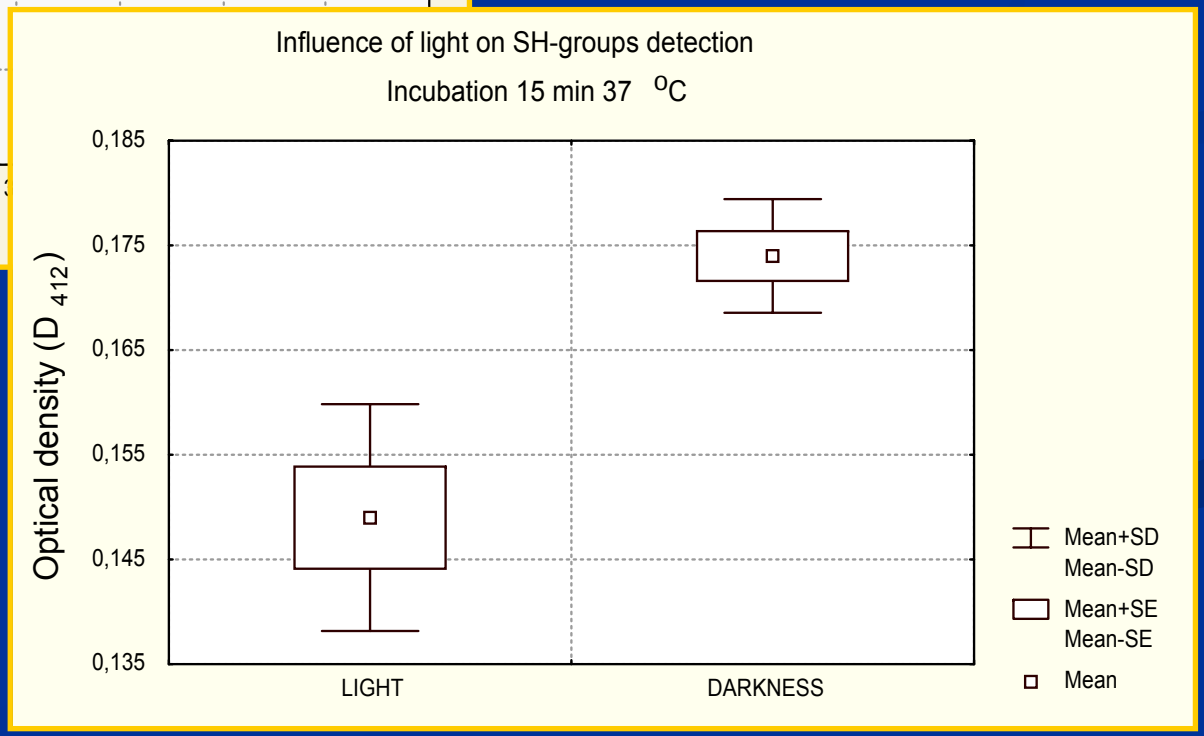
Extremely low frequency fluctuations



Influence of temperature and light



Decline of velocity of the reaction during solar eclipse equivalently to the decline of temperature of solution in 2-3°C (!).



The velocity of reaction is increased (!) upon darkness (in opposite, is was decreased during solar eclipse).

Influence of extremely low frequency magnetic field

Experimental influence of magnetic field

0.005-0.008 & 8 Hz 10^{-6}-10^{-7} μT

not changed (!) velocity of thiol-disulfide exchange !

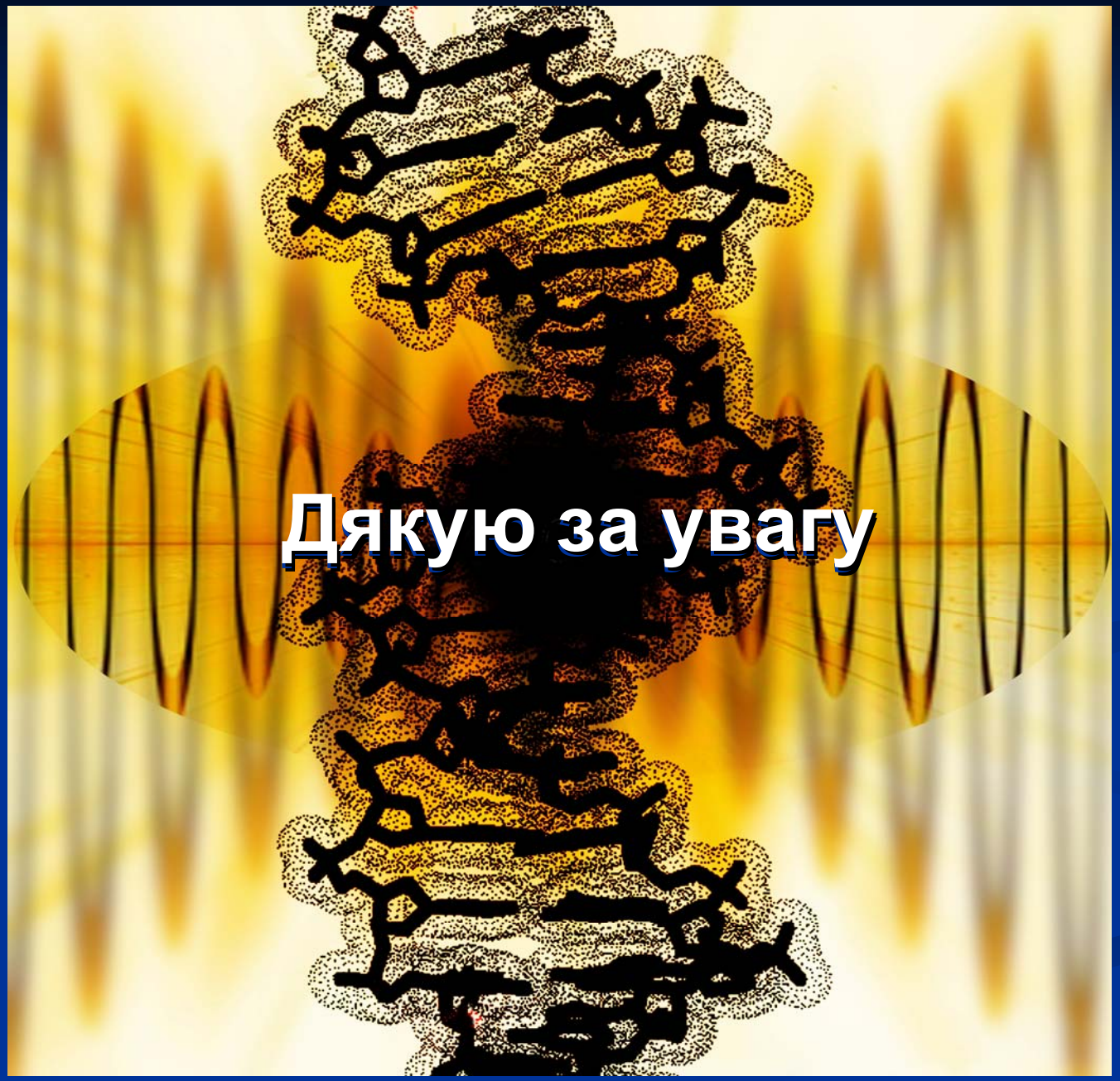
If it is electromagnetic influence that depend on state of ionosphere:

1. What frequency diapason (not ELF) of electromagnetic background, generated in ionosphere, is biologically active? What we know about bioactivity of 10^2-10^3 Hz? 10^3-10^4-10^5? 10^6? 10^7-10^{10}?
2. What processes are in ionosphere can generate such EMF that correlate with EMF-fluctuations if ELF-diapason?
3. Are there separated frequencies? Or complex spectral “pattern”?

Influence of extremely low frequency magnetic field

Is it electromagnetic influence?


Дякую за увагу


Дякую за увагу