مقاله نامه بیست و دومین کنفرانس بهاره فیزیک (۳۱-۳۰ اردیبهشت ۱۳۹۴)

A case study on gathering observational data collected in case solar wind and solar CNO cycle with planetary system formation theory

Akbar Mohammadzade[1]

[1]*Iran university of science and technology*

Email :akbarmohammadzade@yahoo.com

Abstract :

A considerable part of the observational evaluable data collected in duration of some last years hasn't been used for theoretical calculations in authored system formation papers. I have collected last my works on the system formation theory in this paper. The text refers what we have added and how we have compared and concluded yet. More additional complements are needed to those works and I am at the midway of theorizing of Tittus- bode law by means of wave function method. We are forecasting further usage of this works for discovering new exo-planets ,generalizing to galactic systems and so on.

Keywords : planetary migration ,solar wind, solar CNO cycle ,T-B law

1.Introduction

Beside our cosmogony continues studies ,we do consider that there is specially need to work on solar wind together with system formation and system arrangement properties . As we know the man is at the gold uprising time in case exo planet studies , too he spends gently budgets for sending observatory spacecraft or build on land expensive infrastructures .

Observations shows :

1) The dense hot atmosphere of Venus is made from carbon dioxide.

2) Fresh suitable atmosphere of earth is made from oxygen and nitrogen generally

3) Mars atmosphere is made from carbon dioxide.

4) Huge part of Jupiter and Saturn mass is made from hydrogen and helium

5)Uranus ,Neptune ,Pluto ,generally are made of Water , Ammonia ,Methane

2.Main objectives of my last works

It is our global accessible field of study, which is simply the solar system where our goal easily can be obtained to generalize it to other planetary systems. For this objective in my last worked papers , I carried out a suitable approaches for explanation of the formation of three famous molecules CH_4,NH_3,H_2O in solar system,

specially at the outer part of it . As we monitored at ever, the solar CNO cycle and carried particles by solar wind with its blowing model causes physicochemical reaction such as what we saw on the surface of meteorites and under the soil of Mercury's north pole and comets tile . In those papers we discussed that the condition of inner solar convection and particle ejecting activity which sends proton and electron and other ionized particles specially long time half –life isotopes of Carbon and Nitrogen and Oxygen, carried by solar wind at its Archimedean spiral path , causes the resultant of sedimentation of particles at outer part of system(the particles never leave the solar system and are fouling at the outer part orbital). We did result it of really observational data containing main characteristics of members.

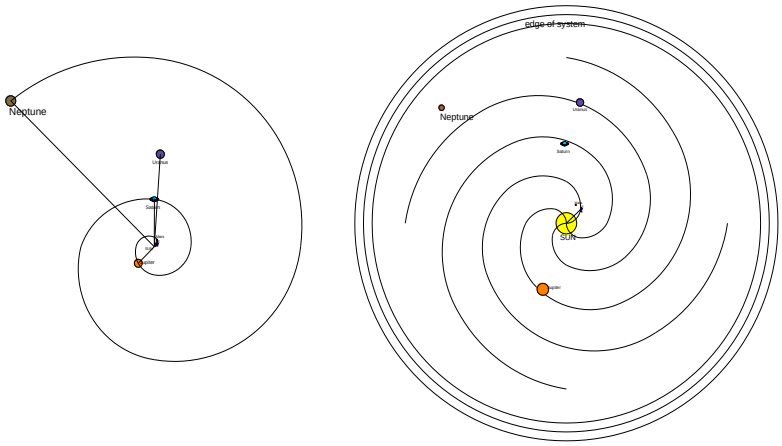
3. Two giants gigantic rotation

We know that the Jupiter rotates round its axis very fast at the sidereal period about 2.5 times faster than our earth with gigantic speed for its surface (12.3 Km/s)where the earth rotates with 0.465 Km/s ,the Saturn is so and it rotates a little slower than the Jupiter . Then our discuss concluded to calculating and analysis of main resource of angular momentum which is coming from gradually particle absorption from global space which results the mass increasing of those planets.(angular momentum of Jupiter would be reduced by satellite system)

Shall we be able to measure mass increasing rate of Jupiter and Saturn ,too the Uranus and Neptune and Pluto's rates ?Of course it is possible .

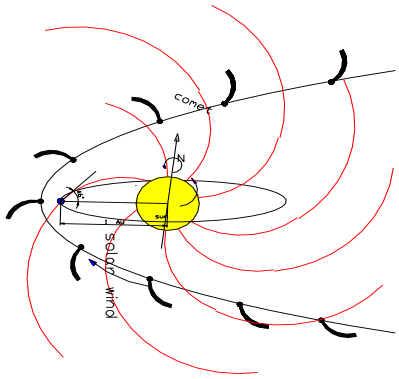
4. Old my discussions about the system formation and secondary processes

1.Any comet loses some percent of its mass when is passing from nearby the sun ,one simply calculation of geometric or arithmetic minor growth shows that the comet can only rotate for example 25 to 50times round sun then disappear after losing its mass by coma. When they are existing yet then the simple analyze says that they increase their mass somewhere. We said the place is outer part of planetary disc where the three famous molecules said last and dry ice (CO_2) are absent.

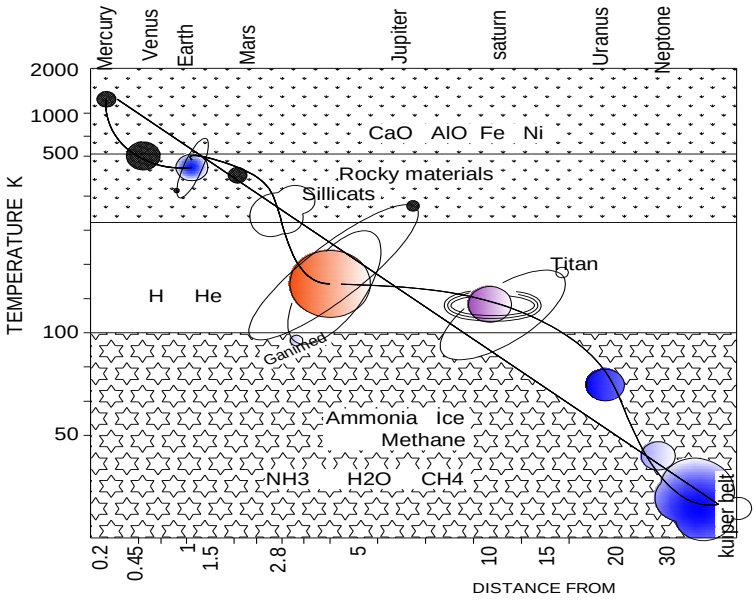


1.solar wind blowing pattern in system

مقاله نامه بیست و دومین کنفرانس بهاره فیزیک (۳۱-۳۰ اردیبهشت ۱۳۹۴)



2.Comet tail or coma formation and disappearing against the solar wind



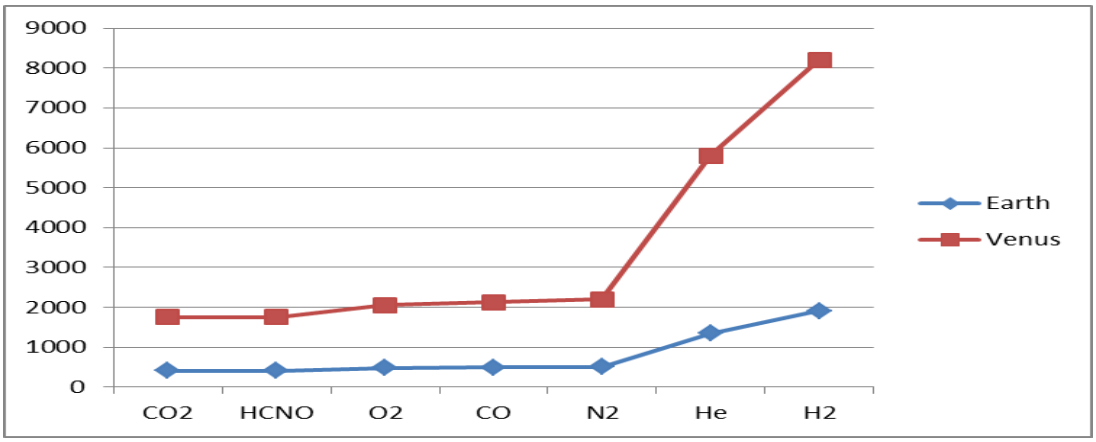
3.Temperature-distance from sun diagram of solar family

2.Venus lost or not have had magnetic field , then the solar wind strongly effected on it up to break its normal rotation and made it to retrograde rotation. If it had magnetic field Van Alen belt was resist against the wind .In case Venus its hot and dense atmosphere says us that the planet absorbs all which comes by solar wind but the light gasses escape of surrounding for the reason of thermodynamic rules ,as it shown in table 1.

مقاله نامه بیست و دومین کنفرانس بهاره فیزیک (۳۱-۳۰ اردیبهشت ۱۳۹۴)

Table 1. V_{rms} of some particles in our atmosphere and Venus one:

Boltzmann's formula $V_{rms}=\sqrt{3kT/m}$						
Complex and its formula		Molecular mass	EarthVs=11.2km/s		VenusVs=10.4km/s	
			Vrms on (m/s)	Escapes or remains	Vrms on (m/s)	Escapes or remains
CO2	Carbon dioxide	45	407	remains	1750	remains
HCNO	Ciano Hydride	42	407	remains	1750	remains
O_2	Molecular Oxygen	32	477	remains	2054	escapes
CO	Carbon monoxide	28	490	remains	2130	escapes
N_2	Molecular Nitrogen	26	510	remains	2200	escapes
He	Helium	4	1350	escapes	5805	escapes
H_2	Molecular hydrogen	2	1908	escapes	8204	escapes

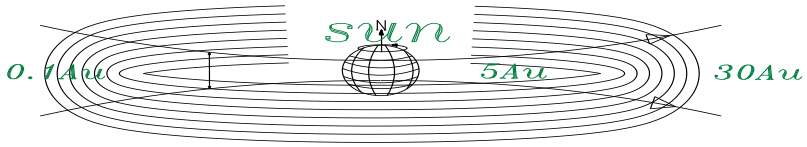


Graph 2. Escape velocity of planets for molecules

3.We calculated that the solar wind particles rotate three and more times round solar system when reach for example Neptune orbital (see figure 3. And table) the wind path is Archimedean spiral which rotates round the origin (central mass of system) by angular increasing change.one mole of air is 22.4 litters and $6.023*10^{23}$ particles and 28.8 grams ,then every cube centimeter of air has $3*10^{19}$ molecules . On time from solar body ejecting particles has 50 P/cm^3 but for duration of more than 4billion years fouling at planetary disk particles will be about a quarter Saturn mass.

مقاله نامه بیست و دومین کنفرانس بهاره فیزیک (۳۱-۳۰ اردیبهشت ۱۳۹۴)

Sun ejecting particles are 10^9 kg per second $3*10^{16}$ kg and $1.3*10^{26}$ kg per year ,T -Thouri star sends stellar wind one million times further than domestic one .so for duration of 100 million years of first solar life the star has been ejected $10^{11}*3*10^{16}$ kg or $3*10^{27}$ kg (about 1.5 Jupiter mass). For the text passing below ,if the particles sediment at 0.1 Au thickness disk with 30-5 Au radius : $V= \pi (r^2_2- r^2_1)*t= \pi(30^2-5^2)* 1.5*10^{13}*0.1*(1.5*10^{13})=6.2*10^{27}$ m^3



$\rho= (1.3*10^{26} +3*10^{27})/ 6.2*10^{27} =0.5$ kg/m^3 middle density of such particle surrounding area with 95 percent proton !!!!. 40 percent air density .

where did those particles go , or where are them now ?wonderful !!!

4. Mercury has invisible aurora , Because of its magnetic field coming from iron core(Mariner 10 detected 10^{-9} T), the magnetic field can hunt solar wind ions to produce water although the planet hasn't atmosphere . For the reason of right hand rule the aurora is forming at north pole ,we show the mechanism on the scenario of this research project as this :

The solar wind densely hints Mercury but the planet is weak (mass and gravity) and little , the planet's magnetic field resists against it ,for the vector multiplying right hand rule it rotates to form aurora at north pole

then after falling particle mixing with surface soil for making mud(figure 4) , The planet rotates round itself semi tidal locked to sun, in direction counter clock wise ,then the solar wind particles as plasma hit its magnetic field and for the reason of Carioles effect it will produce aurora at north pole. Foaling of particles H+ and O++ can produce water at shadow side of slow rotating planet.

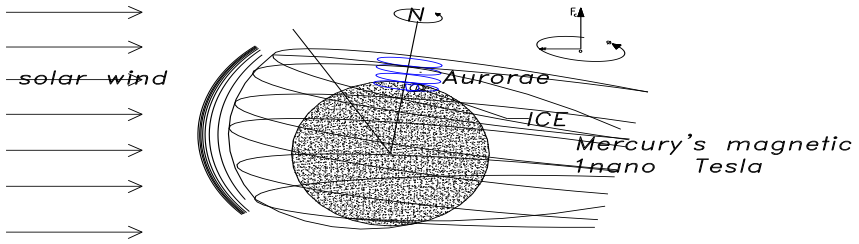


Figure 4.Mercury's magnetic field

5. Measurement on γ-rays from a solar flare active region10039on 23 July 2002 with the RHESSI space craft spectrometer indicated that the CNO cycle occurs at the solar surface electrical discharge along closed magnetic loops . After two feet of the loop H+ ions are accelerated to energy levels that surpass coulomb barriers for the (C12 H1 , γ) N13 and (N14 H1, γ)O15 reactions .first X-ray appears along the discharge path .Next annihilation of β+ particles from N13 and O15 (t ½ =10 m an 2m)produce bright spots.

6. Then our studies and calculations beyond the case of comets, guided us that the outer planets and some satellites collect the particle or create condition to form those three famous molecules CH_4,NH_3,H_2O[4]. For example we determined that, when it was first nebula accretion has formed comets then any comet could be able to rotate only some periods round sun then might have been disappeared .Conservation of elementary system angular momentum of two gas giants Jupiter and its neighbor Saturn might be reduced by momentum of their satellites but they are rotating so fast (one cycle per 10 hours) . Those our last researches concluded to the fact that they are absorbing hydrogen and helium from surrounding space ,which both are coming from sun by solar wind, then the mass absorption gives them increasing angular momentum.

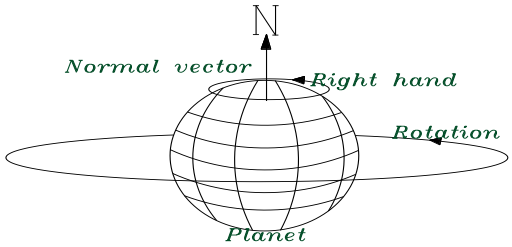


Figure 5.Planetary rings and aurora formation

7. In case beyond Uranus, the planet rotates wonderful with huge axial tilt , how is its surrounding state?...,we said that the solar wind particles arriving from north and south pole of sun cuts planetary disk at nearby the Uranus , the planet hunts particle wise versa then it forced to tilt 98 degrees. the mechanism is shown in below shape: The kappa of solar wind path curvature is :

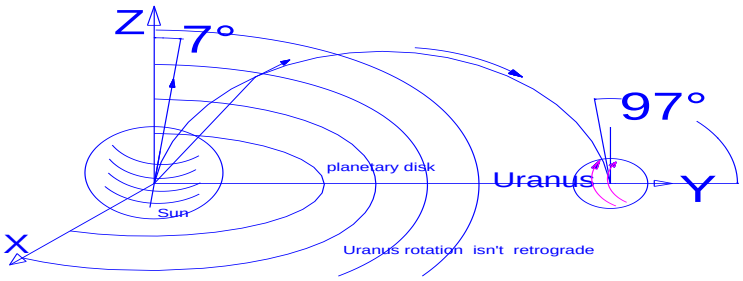


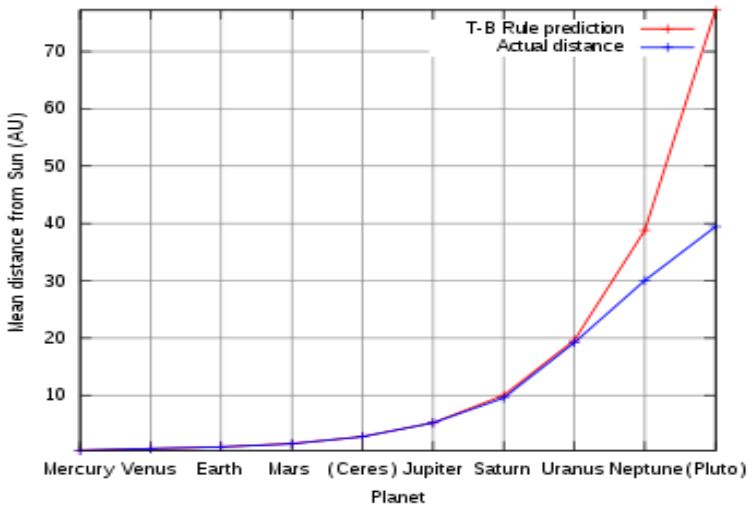
Figure 6.The wind and Uranus condition

2.Table of solar family characteristics

planet	*Distance from sun (AU)*	*Solar wind direction (Radian)*	*Solar wind direction*	*atmosphere*	*Rotation period (hours)*	*Mass (M_e)*	*Sidereal velocity*
Mercury	*0.4*	*π/10*	*18^0*	*North pole aurora (as passed in chapter)*	*1345*	*0.055*	*3.2*
Venues	*0.7*	*π/6*	*30^0*	*Dense atmosphere*	*5830*	*0.8*	*1.8*
Earth	*1*	*π/4*	*45^0*	*defending by van Allen belt*	*24*	*1*	*456*
Mars	*1.56*	*2 π/ 5*	*70^0*	*Carbon dioxide atmosphere*	*24*	*0.107*	*241*
Asteroid belt	*2.8*	*7 π/10*	*125^0*	*Rocks , silicates ,meteorites*	*--*	*--*	*--*
Jupiter	*5*	*5 π/4*	*225^0*	*The mighty planet absorbs fully particles*	*9.57*	*317.8*	*12600*
Saturn	*10*	*2.5π*	*Whole circle rotating $+90^0$*	*Surrounding*	*10.17*	*95.15*	*9800*
Uranus	*19*	*5π*	*Two circle rotating $+180^0$*	*Surrounding*	*15.84*	*14.53*	*2590*
Neptune	*30*	*7.5π*	*Three times rotating $+270^0$*	*Surrounding*	*17.16*	*17.15*	*2680*

5.Tittus –bode law and our discussion on primordial arrangement of planetary system

Tittus- Bode law for arrangement of planets in solar system and some satellite system round planets has been as a secretary from 1772 ,and some approaches only give graphs or algebraic or arithmetic rewrite of main formula .Some others tried to relate it to mechanical or cinematic characteristics of gravity field , any scientific approach which be able to generalize further cases is strongly needed now because of that the process of finding exo planets is at first starting time and the law can be used to find other planets or forecast it as scientist found asteroid belt and Uranus situation forecasted by T-B law.$d = 0.4 + 0.3X2^n$----->n =-∞و۰و۱و۲و۳ و (7)



Graph 2.T-B rule and existing distances comparing graph

6.Gas nebula flattening and sound wave

o Five steps to star and planetary system formation in Solar nebula theory.

1. Collapse o Heating via conversion of PE to KE.
2. Spinning o Spinning up of material to conserve AM.
3. Flattening o Sphere to disk due to rotation.
4. Condensation o Gas to liquid and solid particles due to cooling.
5. Accretion o Solid particles 'stick' due to electrostatic and gravitational forces.

Mechanical waves need material continual environment for oscillation and moving ,vise the electromagnetic one which can move in vacuum ,the energy quantum which does vibrate and rotate creates the second one ,so we cannot have stable or damped mechanical wave ,without considerable density of matter between origin and destination. We see that the original prose which produced the system begun to condense enough round center .It was happened at flattening time when the first global nebula got started to flattening at planetary disk.

7.Planets and satellites formation zones

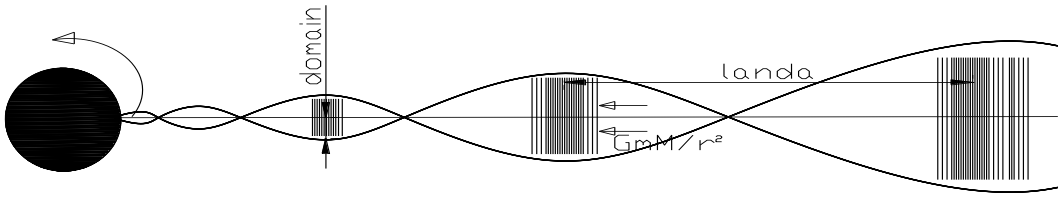


Figure 8.formation of sound wave in elementary flattened disk

With modeling rotating collapsing proto planetary disk matter oscillation with longitudinal wave function for determining historical not theorized Titus-bode law , at first system birth elementary orbital for each planet could be prepared for it at first step even though, all member arranged in all distances of central member by stand damped sound wave created by gravity field ,the Neptune situation shows that it might be only this planet had migrate.

Reference

[1]Aldo M. Serenelli, W. C. Haxton3,4 and Carlos Peña-Garay" solar models with accretion .I. application to the solar abundance problem.

[2] Chang-Goo Kim, Woong-Tae Kim1,2,3 and Eve C. Ostriker" regulation of star formation rates in multiphase galactic disks :numerical tests of the thermal/dynamical equilibrium model.

[3] Meyer-Vernet, Nicole (2007). Basics of the Solar Winds. Cambridge University Press.

[4]john .p et all "detection of solar wind –produced water in irradiated rims on silicate minerals" PANS Early edition p1-4

[5] Rudolf, Trumann &Wolfgang Baum johan "basic space plasma physics "world scientific publishing 1996

[6] "Coriolis effect "From Wikipedia, the free encyclopedia , web site

[7]S.F.Dermot "Bode's law and the resonant structure of the solar system "Nature Physical science 244,18(1973)

[8]M .G. Calkin "Lagrangian and Hamiltonian Mechanics" Dalhousie university published by world scientific 1998

[9]Alex H. Parker, J. J. Kavelaars,Jean-Marc Petit4, Lynne Jones, Brett Gladman and Joel Parker CHARACTERIZATION OF SEVEN ULTRA-WIDE TRANS-NEPTUNIAN BINARIES .

[10]Chang-Goo Kim,Woong-Tae Kim,and Eve C. Ostriker REGULATION OF STAR FORMATION RATES IN MULTIPHASE GALACTIC DISKS: NUMERICAL TESTS OF THE THERMAL/DYNAMICAL EQUILIBRIUM MODEL