



A STUDY ON NOMENCLATURE OF WEEKDAY WITH PLANETARY RADIATION

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Abstract

The study of Ancient Indian theory and modern theory of calendar and origin of weekdays is important for finding the facts that how months are divided into week and each week having seven day. The relation of the names of days with planets remains exactly same quite in each culture. The Hindu calendar is based on lunar months corresponding to the phases of the moon. The solar calendar is rooted to west and its present form is known as Gregorian calendar. This nomenclature related to the planetary radiation. There may be a variation in the intensities of the radiations coming from the planets to earth. This may result in overall change in incoming spectrum at that time. We wish to measure such variations for individual planets on a particular time for, at least, two weeks. And the instruments used for finding the planetary radiation are solar spectrum, PV panel, and colored filters. The methodology for finding the planetary radiation is several colored filters were used to absorb variable wavelengths of visible sunlight. The colored filets absorb all visible light and reflect that of their color. So, to expose the PV panel to a specified wavelength light, it must be covered with a color filter. The used photovoltaic solar module was covered with different color filters, and the changes in panel voltage and current output were measured and recorded.

Keyword: Pachanga, weekdays, Hora Shastra, PV panel, Colour filters

1. Introduction:

The description of time in terms of years, months and weeks is so deep rooted that we rarely think about the origin of their classification (names of days etc.). Years are divided in months which are future divided into weeks having seven days. The Seven days are named as Ravivaar, Somvaar, and Mangalvaar and so on. The nomenclature is valid worldwide and is used in calendar may be lunar or solar based on motion of moon and sun respectively. The solar calendar is rooted to west and its present form is known as Gregorian calendar and basic Indian calendar is lunar or Luni solar. This nomenclature is supposed to be related to the planetary radiations or motions. Each day of week is related to the respective planet according to western science and grahams (planet) according to Indian science. The planets in relation are sun, Moon, Mars, Mercury, Jupiter, Venus, and Saturn respectively for days starting with Sunday. The relationship between days and planets and their order is similar in all type of calendars. Not only the order of days, are their related gods also similar. In addition, as per Indian Astrology, each planet of our solar system has a particular color associated with certain



color. Since each day has its own planet as master planet, so the days have particular color as its own color.

Pachanga elements in the vedic vedagna Jyotisa

The Hindu calendric days starts with sunrise. It is allotted five properties called angas.

1. Tithi 2. Vara 3. Nakshatra 4. Yoga 5. Karana. The following are the definitions:

Tithi: Amavasya" refers to the instant of the new phase of the moon, or the purpose in time when the longitudes of the Sun and Moon are equal. The tithi is that the time it takes for the Moon to maneuver 12 degrees off from the Sun. The Moon's complete revolution (29.5 days) takes up 30 tithis, 360 degrees. Because the Sun and also the Moon move at different speeds, the length of a tithi changes all the time.

Vara: It is the day's name, such as Monday (Somavar), Tuesday (Mangalvar), and so on. (1)

Nakshatra: The moon's location within the Zodiac asterisma is called a nakshatra. The time it takes the moon to travel $13^{\circ}-20'$ zodiac intercepts starting from Aswini Yogatara is the duration of the Nakshatra. The cycle of 360° is completed by 27 Nakshatras. The asterisma begins with the star Piscium Revati.

Yoga: sum of longitudes of sun and moon. The period of time during which the distance between the Sun and Moon is increased by $13^{\circ} 20'$. This is about 1 day. Only vyatipata and vaidhrti yoga are listed in addition to these. In reality, the Vedic jyotisa mentions two yoga's one for each declination of the sun and moon towards the north and south poles of the equator. It's possible that the first calendar just had one element, tithi (2).

Karana: The karana is half the tithi, or the time when the difference between the longitudes of the Sun and the Moon grows by 6 degrees. The first three units are still in use, but Karanas and Yoga's are rarely used in modern life.

Origin of names of weekdays (Indian Calendar)

The explanation for the nomenclature of weekdays is available in various ancient Indian sources like Jyotish, Surya Siddhartha and Aryabhattyam. The Hora –Shastra and Veda also give the idea how planet relate not only to the weekdays but also to the hours of the days. In these texts, the planets and consequently their days are also associated with specific colors.

In Jyotisha: A Vedic day is a 24-hour period that begins with the sunrise and ends with the dawn of the next day. There are two parts to this time period: daylight and night-time. Daytime is defined as the time between sunrise and sunset, while night-time is defined as the time between sunset and dawn the next day. Then these two periods are split into 12 equal-length hours, known in Vedic astrology as planetary hours or hora.



Except during the equinoxes, when light (day) and darkness (night) are balanced, the planetary hours of day and the planetary hours of night will be of different lengths (3).

As per hora shastra,

Planetary hora is one amongst the foremost important a part of Muhurta and also important for determining the order of weekdays. Hora comes from Sanskrit word and frequently called as hour. There are 24 horas (hour) all told. The division of 12 signs into 24 horas relies on the 24 hours duration of daily. The concept of the hora comes from the lordships i.e. 7 planets. At the primary glance hora are kind of like the normal hours which all folks are wont to. A planetary day consists 24 horas and a normal day consists 24 hours. But planetary day begins at the instant of sunrise within the given place while ordinary day begins in the dead of night. But the instant of sunrise is usually different for various place on the planet and has its own planetary day while ordinary day is that the same for all the places within the same zone. Ordinary hours always have same continuity (60 minutes) while the length of hora varies round the year and therefore the day hora is typically not adequate night hora. Vedic astrology divides every day into 24 horas. From sunrise to sunset, 24 horas are ruled by seven planets, and the lord of the first hora at sunrise is often the lord of that individual day. It all depends upon the gap between the planets and the sun and their respective speeds with regard to the earth, which is the rule used for allocating houses to planets. For this, we are going to first need to understand the positions of the planets within space. In astrology, the positions of planets are given under the names Saturn, Jupiter, Mars, the sun, Venus, Mercury, and the moon. Because there are 24 horas in a single day and night, and each hora consists of an hour, the lord of each hora could be a planet in the closest lower orbit's horas are determined on the premise of Srishtyadi ahargana (the number of terrestrial days passed from the day of creation) (4).

The lord of first HORA is the sun because in the beginning of the creation the sun was visible first. So, it considered as the lord of the first Hora and the first day has been named after it.

The following Hora is called after shukra (Venus), the second Hora's ruler and whose orbit is close below the sun. Budha (mercury), whose orbit is exactly below that of shukra, is the ruler of the third Hora (Venus). The moon (chandrama), whose orbit is below that of shukra (Venus), is the lord of the fourth orbit, and so on until the eighth hora, after which the circle is repeated. Mercury is once again the ruler of the 24th Hora.

Aryabhatiyam also explain order of the weekdays and their association with various planets (grahas). Aryabhatiyam (Kalakriya Pada, verse, 16) writes

सप्तैते होरेशाः शनैश्चराद्या यथाक्रमं शीघ्राः/
 शीघ्रक्रमाच्चतुर्था भवन्ति सूर्योदयाद् दिनपाः //



The seven planets (grahas) are arranged in the increasing order of velocity. The planets occur fourth in the increasing order of velocity are the lords of the successive days. The twenty-four hours being measured from sunrise. The lords of the twenty-four hours are Saturn, Jupiter, mars, sun, Venus, mercury, moon, Saturn, Jupiter, mars, sun, Venus, mercury, moon, Saturn, Jupiter, mars respectively and the lord of seven days are Saturn, sun, moon, mars, mercury, Jupiter, Venus, respectively.

Similar explanation is found in Surya Siddhanta (Bhugoladhyaya-78) which says

मन्दादधः क्रमेण स्युश्चतुर्था दिवसाधिपः
होरेशा सूर्यतनयादधोधः क्रमशस्तथा

It says that starting from the Saturn downward the fourth graha is called the lord of the days. The lords of the hour are the grahas that begin with Saturn and work their way down. Each graha is supposed to own an hour every day. The weekday is named after the graha (planets) corresponding to 6 AM of the day. The arrangement of weekdays starts from Saturday and then seven planets are arranged in the increasing order of distance or velocity. According to velocity of planets, the sequence of days begins with Saturday followed by Sunday, Monday, Tuesday, Wednesday, Thursday, and Friday. Thus, each planet owns one day. The other planets are supposed to be very far and do not affect the earth (5).

The Vedic concept of Time:

The God of Death is personified as Time (Yama). Because death is the defining feature of human life, kala governs how long a person lives on this planet and is determined by their birth time. As a result, time and death are linked, because a person's time on earth begins with birth and ends with death (6). Time has two elements in this Vedic view: Kala and Mahakala. Mahakala is the timelessness eternity within which all the event take place in relative time i.e. kala. Mahakala is viewed as Bhagawan—it is self-generated; nothing makes it exist. It has no provenance. Kala, on either side, is always moving (ghati sheel) and can never be stopped. akala is viewed as Bhagawan—it is self-generated; nothing makes it exist. It has no provenance. Kala, on either side, is always moving (ghati sheel) and can never be stopped. The word "kala" has two meanings: time and death. Each human being's life and death are in Kala's hands. Kala is the destroyer of all existence, dragging all organisms to their deaths. All enjoyment and grief are caused by qualities associated with time. Jyotish astrology is the science that deals with these issues (7). (Parashara M. Brihat Parasara Hora Sastra: Guide to Hindu Astrology. In: Sharma GC, editor. New Delhi: Sagar; 1994.) Vedic culture's entire structure is geared toward returning to Mahakala timeless eternity from inside the confines of ka la time—moksha. tire structure is geared toward returning to Maka La's timeless eternity from inside the confines of ka la time—moksha (8).



In the present work, we have tried to explore the scientific basis of this relationship. Some experiments were carried out to see whether this relationship can be observed experimentally

2. Experimental Setup

In the current review, a PV framework comprises of a monocrystalline module. A few colour filters were used to ingest variable frequencies of apparent daylight. The colour filters soak up all the apparent light and reflect that of their shading. In this way, to uncover the PV board to a predetermine frequency light, it should be covered with a shading channel. The utilised photovoltaic sun-powered module was covered with different shading channels, and the progressions in board voltage progressions. Three filters of various shadings and conveyances were used (yellow, red, green). A DC ammeter and DC voltmeter were used to quantify the PV board voltage and current. The experiments were repeated several times, once without the filters and once with each colour filter separately. A potentiometer was used to change the load resistance of this device when it was attached to the panel. Also, the voltage, current, and light power were estimated. A bunch of shading channels were utilised to change the shade of the occurrence light. In each path, the shading channel was taped directly to the sun. The PV board's current and voltage were estimated for five splendid days. Three variable colour filters (yellow, green, and red) were utilised in the examinations. The tests were conducted multiple times to affirm its repeatability and, furthermore, decrease its vulnerability. The essential two exam cases:

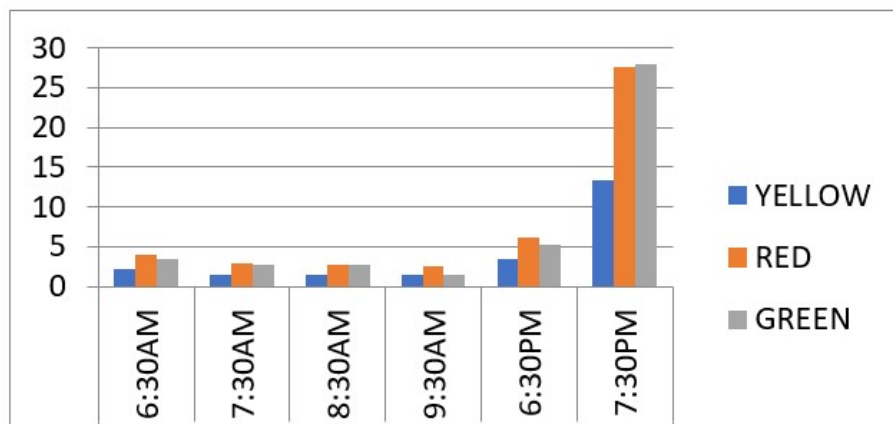
1. The PV panel was covered with a single coloured filter, and the results were measured and compared to the no-filter condition.
2. The PV panel was covered with a single coloured filter, and the results were measured and compared to the no-filter condition (9).

3. Result and Discussion

The intensity of red, yellow, green color in solar radiation was measured for fifteen days and is represented in the form of graphs. The graphs represent the change in value of intensity of a color as compared to white light value. Consequently, larger value represent that the effect of color is low and vice versa. The effects of colors observed on different days are given below.

Thursday is related to the Jupiter planet. The color of this day is **yellow**.

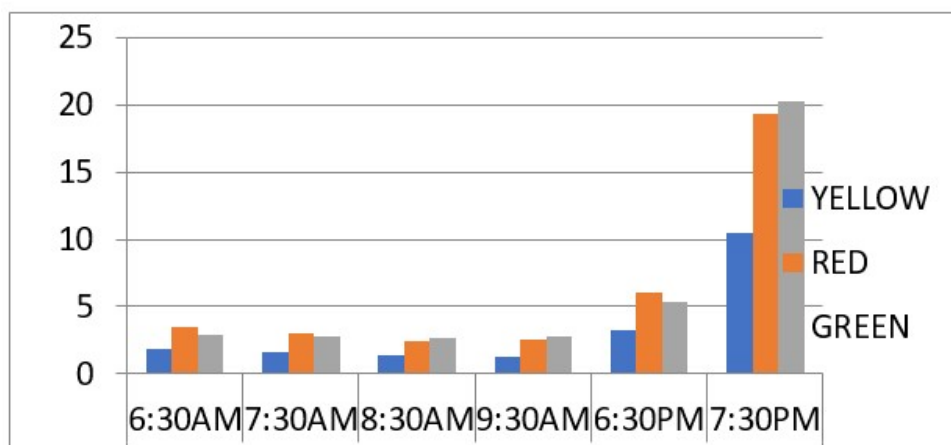
Usually the yellow color content is maximum on all days as compare to other colors and this is true for Thursday also. However, on this day relative effect of yellow as compare to other days is low. Also, we observed that although the effect of yellow color is maximum for entire day, at 9:30 am effect of green color is high.



(Graph 1. Bar graph of 23/7/11)

Friday is related to Venus planet. The color of this day is **sea green, pink**.

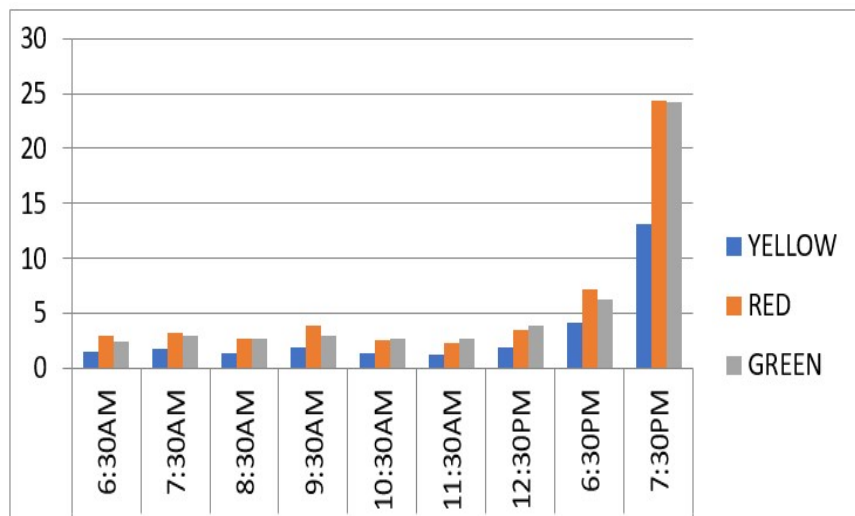
The value of green color is quite high as compare to red color at 8:30, 9:30 am and 7:30pm. So, at this time the effect of green color is quite low as compare to red color. For the rest of the day, the value of red color is high so the effect of red color is lower than green color.



(Graph 2. Bar graph of 24/7/11)

Saturday is related to Saturn planet. The color of Saturday is **black**.

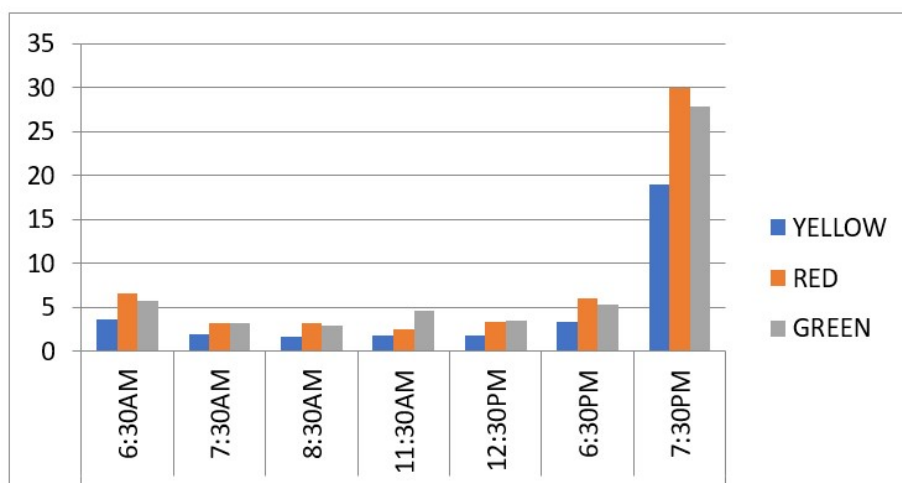
On this day the effect of red and yellow color is changing with respect to each other for entire. So, in the result effect of red color is quite low as compare to green at 6:30 am, 7:30 am, 9:30 am, 6:30pm and 7:30 pm. The value of green is high corresponding to lower effects at 8:30 am, 10:30 am and 11:30 am and 12:30pm. We were not able procure blue filter.



(Graph 3. Bar graph of 25/7/11)

Sunday is related to Sun. The color of this day is **red**.

On this day the value of red color is quite high as compare to green color. At 6:30 am, 8:30 am, 6:30 pm and 7:30pm the value of red color is high and effect of red color is low. So the red color is quite low as compare to green for whole day except at 7:30am, 11:30 am and 12:30 pm when effect of green is low.

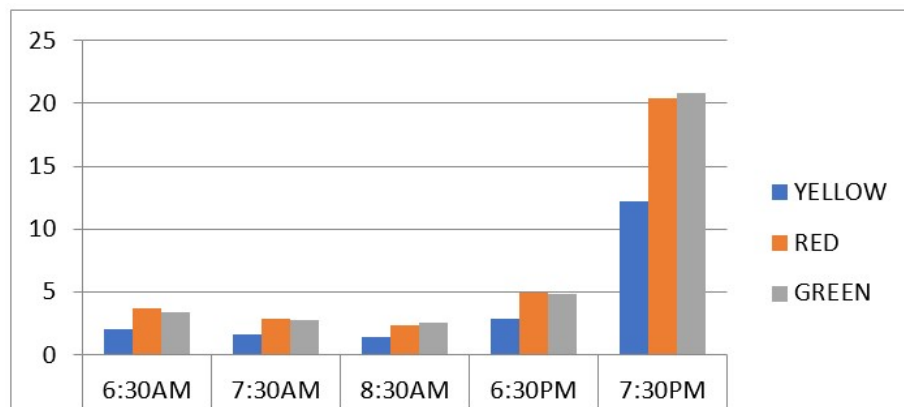


(Graph 4. Bar graph of 26/7/11)

The color of Monday is white because this day related to **White or off white**. White is mixture of all colors. We observe that on this day the effect of yellow color is maximum. And the value of red and green color though varies with respect to each other is almost



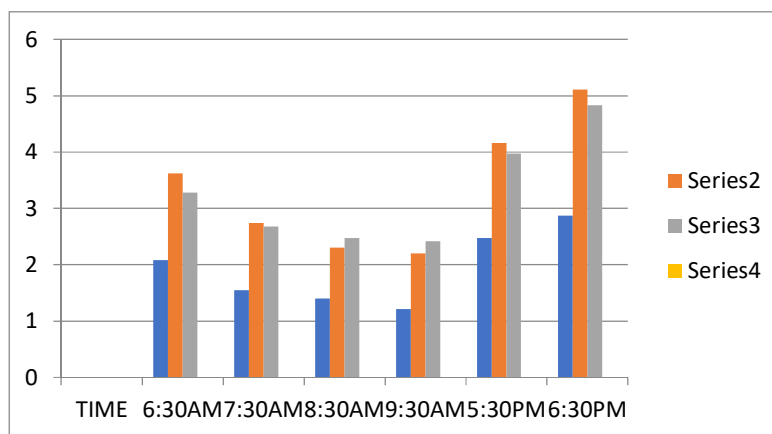
comparable or same for whole day. Also the value of yellow is not much different from red and green.



(Graph5. Bar graph of 27/7/2011)

This day related to the Mars and the color of the day is **Orange, red.**

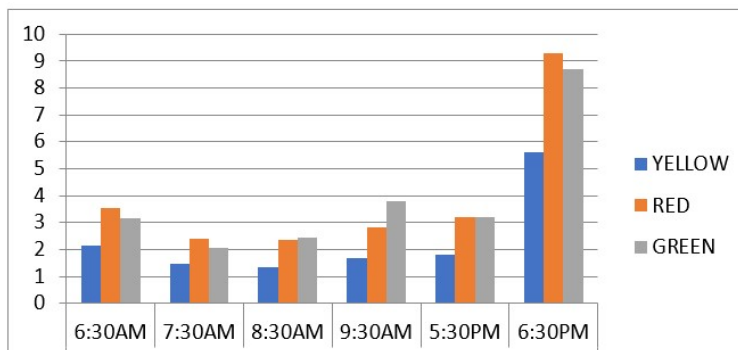
At 8:30am, 9:30 am effect of red color is high and at 6:30, 7:30 am and 5:30,6:30 pm effect of this color is low. Thus, the effect of red color is usually low in this day.



(Graph 6. Bar graph of 28/7/11)

The color of Wednesday is **green.** This day related to Mercury planet.

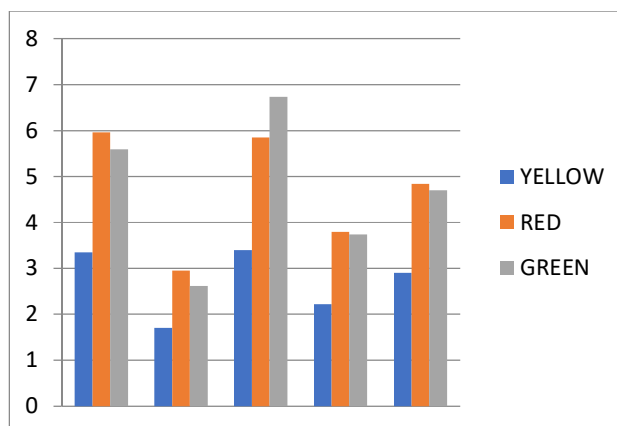
On this day the value of red is quite high as compare to green color. So, in the results effect of red color is quite low as compare to green. The value of green color is high so the effect of green color is low. At 8:30am and 9:30 am the effect of green color is low.



(Graph 7. Bar graph of 29/7/11)

The Color of this day is **yellow**. Thursday is related to Jupiter planet.

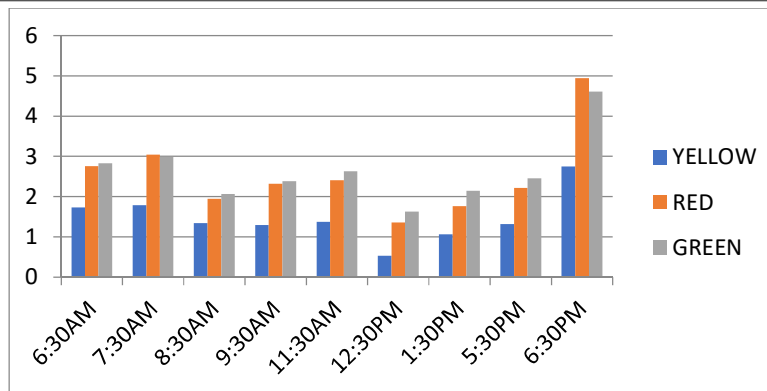
The yellow color content is maximum on all days as compare to other colors and this true for Thursday.



(Graph 8. Bar graph of 30/7/11)

Friday is related to Venus planet. The color of this day is **sea green, pink**.

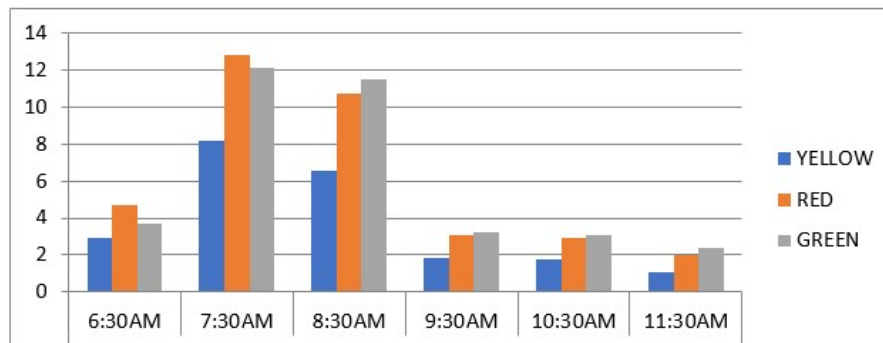
On this day at 6:30am, 8:30am, 9:30am, 11:30am, 12:30 pm, 1:30pm and 5:30pm the effect of green color is low as compare to red color. The value of green color is quite high as compare to red color.



(Graph 9. Bar graph of 31/7/11)

Saturday related to Saturn planet and color of this day is **black**.

On this day the effect of red color quite low as compare to green color at 6:30am and 7:30am. At 8:30am, 9:30am, 10:30am, and 11:30am the effect of green color is low.



(Graph 10. Bar graph of 01/8/11)

This result concludes that the red color has the least amount of light pass through panel because it didn't have more energy to excite the electrons on the silicon atoms. When no filter was used (visible light) the PV power was the highest. The results show in different filters the power was significantly reduced in comparison with module without the filter. The light frequency is influenced by the color which allows a limit of the energy to pass through an object and this light color defines how many photons are allowed to pass to the solar panels. Some filters absorbed fewer spectrums of light then other filters. The filters affect the photos quantity that passes through it to the solar panel and thus changing the power generated. Due to the addition of colored filters, the PV panel output power was reduced significantly compared to the case without filters. The generated current was increased with the longer wavelength filters use.



4. Conclusion

As observed from literature review, different planets are related to each day of week and specific colors. Though we found explanation in various ancient Indian texts, the data available in western text is very less. However, the most important thing among all the text is same nomenclature and similar relation of days with planets. These observations lead us to believe that that this relation of different days with planet everywhere could not be a mere coincidence and need to be explored. We expect that the electromagnetic radiation of this planet may be affecting each other and hence made a hypothesis that their effect on our earth vary periodically with a periodicity of seven days. We hypothesized that there should be some periodic variation in intensity of spectrum of solar radiation which is affecting and resulting in their association with days and colors. So, it was required to measure the intensity of different colors present in the spectrum of solar radiation consecutively for two weeks at least so as to find their relationship with weekdays. We were able to procure only red yellow and green color filter and instrument s used were not very sensitive. Despite the limitations of the experimental set up we were able to find some variation in the intensity of colours with time as well as.

After observing the intensity of different colors of solar radiations on different days we observed that there is a variation in the color intensity with time and days.

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