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THE ADJECTIVES *LIGHT* AND *DARK* IN ASTROPHYSICAL TEXTS: A CORPUS STUDY

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Abstract

The aim of this paper is to analyze the uses of the lexemes ***light*** *and* ***dark*** *in astrophysical texts. The research questions concern not only their frequencies and use in specialized terms, but also the contexts in which they tend to occur. We are mainly interested in the basic meanings of the adjectives* ***light*** *and* ***dark****, relating to visual perception.*

For the purposes of our research, we compiled a corpus of abstracts extracted from nine scientific journals specializing in astrophysics. The software employed to create the corpus was AntConc Version 4.2.0.

*The lexeme **light** occurs in the corpus 1,478 times, including 867 occurrences as an adjective, whereas the lexeme **dark** is found 1,610 times, including 1,473 occurrences as an adjective. The most frequent word combinations include the following ones: **light curve, light source, light travel, light yield, light time, light intensity; dark matter, dark energy, dark sector, dark universe, dark fluid, dark spot, dark halo.***

*The most popular word combinations including **light** and **dark** are scientific terms, e. g. **light curve, dark matter and dark energy.** The most frequent adjectival uses of **light** relate to the phenomenon of light, not to the qualities of being bright or pale. The identified expressions could be paraphrased as N **of light**, e. g. **light source > source of light**. On the contrary, **dark** – as used in the most frequent expressions – refers to the quality of being 'devoid of light' and 'of low lightness'.*

***Keywords**: **light** and **dark**, astronomy, astrophysics, collocation, corpus study, opposition, terminology.*

1. Introduction.

This paper presents the uses of two opposite adjectives, *light* and *dark*, in astrophysical texts. We investigate the occurrences of these adjectives in the corpus compiled for the purposes of our study. The corpus, compiled with AntConc, includes abstracts extracted from nine scientific journals, including, among others, *Advances in Space Research*, *Journal of Atmospheric and Solar-Terrestrial Physics* and *High Energy Density Physics*. The corpus size is 2,319,787 words.

We are mainly interested in the meanings of the adjectives *light* and *dark* which are related to visual perception, namely the presence and absence of light respectively. The *Merriam-Webster Dictionary* provides the following basic meanings of these two lexemes:

light (adjective 1)
"having light : BRIGHT"
"not intense in color, coloring, or pigmentation : not dark : PALE"
"of colors : medium in saturation and high in lightness"
(URL: https://www.merriam-webster.com/dictionary/light)

dark (adjective)
"devoid or partially devoid of light : not receiving, reflecting, transmitting, or radiating light"
"transmitting only a portion of light"
"wholly or partially black"
"of a color : of low or very low lightness"
"being less light in color than other substances of the same kind"
(URL: https://www.merriam-webster.com/dictionary/dark)

In the case of the adjective *light*, we should also consider its meaning related to weight:

light (adjective 2)
"having little weight : not heavy"
"designed to carry a comparatively small load"
"having relatively little weight in proportion to bulk"
(URL: https://www.merriam-webster.com/dictionary/light)

It is worth noting that the meanings of both *light* and *dark* are associated with colour as these adjectives are used to indicate the degree of brightness of a colour. Moreover, *dark* can function as an equivalent of *black*.

2. Literature Review.

This section of the paper presents research on the adjectives *light* and *dark* as well as a short overview of studies of specialized vocabulary.

2.1. Light and dark.

When we take into consideration the meanings 'having light' and 'devoid of light', the adjectives *light* and *dark* present a binary opposition. The denial of one of them is the assertion of the other (Brinton, 2000, p. 136; Martinek, 2019, p. 280). At this point, it is worth recalling that according to Ferdinand de Saussure (1966 [1916], p. 107), opposition is one of the primary sense relations which is easily recognizable by language users. It is also perceived as an explicit feature not only from the linguistic point of view, but also from the psychological and philosophical perspectives as it is seen as "cognitively primary". The search for contrastive elements is frequently a starting point of philosophical considerations and a driving force of the development of knowledge (Mikołajczak-Matyja, 2018, pp. 2–3).

As signalled above, both *light* and *dark* are associated with colour. This allows us to examine their meanings and uses in the same way as colour terms are investigated (for corpus studies of colour vocabulary, see, among others, Bogushevskaya, 2020; Gieroń-Czepczor, 2011; Lototska, 2021; Stanulewicz & Grabarska, 2018; Stanulewicz & Komorowska, 2021; Stanulewicz & Pawłowski, 2018; Stanulewicz & Radomyski, 2021; Steinvall, 2002; Warth-Szczygłowska, 2014).

Feldman (2006, p. 104) states that "colours are not individual wavelengths or collections of adjacent wavelengths. The colour we perceive depends on the interaction between illumination, a reflecting object, the reflections of nearby objects, and the detailed structure of our eyes and brains". In our considerations, we will concentrate on one of the interactions of colours with objects in the real world, namely, illumination. Palmer (1999, p. 714) defines illumination as "the lighting conditions in the environment: how objects are struck by photons either directly from the light source or indirectly from reflections by other objects".

We should here recall the classification of colour terms proposed by Berlin and Kay (1969), who suggested that eleven basic colour terms join the lexicon of a language in a certain order (see Figure 1).

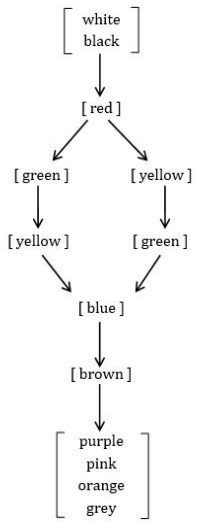

Figure 1. The evolutionary sequence of basic colour terms (based on Berlin and Kay 1969, p. 4, 104)

Figure 1 demonstrates that the first basic colour terms in the lexicon of a language are words for white and black, the third is a word for red, the fourth and fifth – words for green and yellow, the sixth – a word for blue and the seventh – a word for brown. The 1969 evolutionary sequence has been modified (Kay, Berlin, Maffi & Merrifield, 1997; Kay & Maffi, 1999, 2005). In the new evolutionary sequence, it is made even clearer that the first two colour terms actually refer to (1) light and warm colours, and (2) dark and cool colours (see also Palmer 1999, p. 138). Table 1 presents a comparison of the two sequences, including an interpretation of the modified sequence, taking into consideration the categories DARK / LIGHT and WARM / COOL (Palmer 1999, p. 138).

Table 1

Evolutionary sequences: Berlin and Kay (1969), Kay and Maffi (1999), and Palmer (1999)

Stage	Berlin and Kay (1969)	Kay and Maffi (1999)	Palmer (1999)
I (2 terms)	WHITE BLACK	WHITE/RED/YELLOW BLACK/GREEN/BLUE	LIGHT-WARM DARK-COOL
II (3 terms)	WHITE BLACK RED	WHITE RED/YELLOW BLACK/GREEN/BLUE	WHITE WARM DARK-COOL
III (4 terms)	WHITE BLACK RED GREEN (or YELLOW)	WHITE RED/YELLOW GREEN/BLUE BLACK	WHITE WARM COOL BLACK
IV (5 terms)	WHITE BLACK RED GREEN YELLOW	WHITE RED YELLOW GREEN/BLUE BLACK	WHITE RED YELLOW COOL BLACK
V (6 terms)	WHITE BLACK RED GREEN YELLOW BLUE	WHITE RED YELLOW GREEN BLUE BLACK	WHITE RED YELLOW GREEN BLUE BLACK

2.2. Studies on specialized terminology.

Specialized terminology has been of interest to many scholars. As stated in Stoberski (1982, p. 83), apart from specialists of a specific discipline, linguists should participate in investigating and categorizing specialized vocabulary. The study of terminology encompasses single lexemes and longer phrases. What is more, factors such as the origin, development or renewal of terms are also taken into account. Investigating specialized vocabulary is vital since it allows one to explore lexical units specific to a given scientific discipline (Ataboyev & Turg'unova, 2022, p. 382; Odiljonovich, 2020, p. 120). Lastly, specialized vocabulary should be analyzed because specialized terms are "units that have definite definitions of a particular area [...] and generally perform nominative functions" (Mikhojiddinovna, 2019, p. 50).

Nowadays, one may observe a growing number of studies concentrating on the terminology of various scientific disciplines and professional fields, for instance, astronomy (Łukasik, 2015; Waniakowa, 2003), aviation (Kopecka, 2015; Kopecka & Mamet, 2022; Leśniczek, 2015), business and management (Mamet, 2002, 2005), chemistry (Michta, 2007, 2018; Radomyski, 2023), law (Michta, 2022; Michta & Mroczyńska, 2022; Rzepkowska, 2020) or medicine (Bączkowska, 2018, 2019, 2020; Choryń & Sowińska-Mitas, 2015;

Karwacka, 2021; Lu & Coxhead, 2020; Pluszczyk & Świątek, 2015; Zabielska & Żelazowska, 2015).

2.3. *Light and dark* used in scientific texts.

Although, as has already been pointed out, the adjectives *light* and *dark* are "cognitively primary", their uses in scientific texts have not been investigated in detail. In some studies, scholars identify single collocations with *light* and *dark*, for instance, *light reaction* or *dark reaction* (Menon & Mukundan, 2010, 2012).

3. Aim and Objectives.

The purpose of this study is to analyse the uses of the adjectives *light* and *dark* in astrophysical texts. This study is guided by the following research questions:

(1) What is the frequency of the lexemes *light* and *dark*?
(2) What are the most frequent word combinations with *light* and *dark*?
(3) What are the most frequent scientific terms with *light* and *dark*?
(4) What are the most frequent meanings of *light* and *dark* in astrophysical texts?

4. Methodology.

In the present study, we employ corpus tools to extract two-word combinations with the adjectives *light* and *dark*, as well as to carry out their analysis.

The corpus we created is a collection of abstracts from nine academic journals, selected at random from *ScienceDirect* (URL: https://www.sciencedirect.com/) with *Research Randomizer* (URL: https://www.randomizer.org/). The journals were selected by using the keyword *astrophysics* (see Table 2).

Table 2

The structure of the corpus

Journal	Number of words	Percentage
Advances in Space Research	1,000,323	43.12
Journal of Atmospheric and Solar-Terrestrial Physics	397,709	17.14
Planetary and Space Science	388,615	16.75
New Astronomy	169,616	7.31
Astroparticle Physics	129,647	5.59
Physics of the Dark Universe	121,021	5.23
High Energy Density Physics	76,473	3.29
Journal of High Energy Astrophysics	26,741	1.15
Molecular Astrophysics	9,642	0.42
Total	2,319,787	100.00

First, the extracted abstracts were annotated with the software TagAnt 2.0.5 (Anthony, 2022b). Then, word combinations were extracted with AntConc Version 4.2.0 (Anthony, 2022a) by using the function "collocation". We decided to concentrate on the Adjective + Noun combinations extracted from the corpus because nouns are more likely to be regarded as terms than any other part of speech; moreover, they frequently occur as heads of multi-word terms (Michta & Mroczyńska, 2022, p. 33).

Furthermore, to determine which word combinations should be taken into consideration, we decided to calculate the *t-score* values for the extracted two-word bundles. The formula used in our calculations is presented below (Cvrček & Richterová, Eds., 2019).

$$t(xy) = \frac{f(xy) - \frac{f(x)f(y)}{N}}{\sqrt{f(xy)}}$$

where: $f(x)$ = raw frequency of word 1,
$f(y)$ = raw frequency of word 2,
N = number of words in the corpus,

$f(x)f(y)/N$ = expected frequency.

The t-score is a statistical measure in corpus linguistics which enables one to identify collocations and measure their strength. If the t-score value equals or is greater than 2, this suggests that a given word combination is a collocation. If greater the t-score value, the stronger the collocations is (Durrant & Schmitt, 2009, p. 168; Granger & Bestgen, 2014, p. 236). Granger and Bestgen (2014, p. 236) propose a categorization of two-word combinations depending on t-score values (see Table 3).

Table 3

Thresholds for the t-score values (Granger & Bestgen, 2014, p. 236)

Categories of two-word combinations	t-score
Non-collocational	<2
Collocational: low	≥2 and <6
Collocational: medium	≥6 and <10
Collocational: high	≥10

Finally, to check which of the identified word combinations are astronomical/astrophysical terms, we consulted the following dictionaries:

(1) *Cambridge Illustrated Dictionary of Astronomy* by Mitton (2007);
(2) *Dictionary of Material Science and High Energy Physics* by Basu (2018);
(3) *Dictionary of Pure and Applied Physics* by Basu (2018);
(4) *Dictionary of Geophysics, Astrophysics and Astronomy* by Matzner (2018).

5. Results.

In this section of the paper, we concentrate on the results of our corpus study: the distribution of the occurrences of *light* and *dark* by part of speech, the meanings of these adjectives as well as the most frequent word combinations.

5.1. Light.

In the astrophysical texts, the lexeme *light* functions as an adjective, noun and verb (see Table 4). The adjectival uses are the most common ones, constituting almost 59 per cent of the occurrences of this word.

Table 4

Light: parts of speech

Part of speech	Raw frequency	Normalized frequency	Percentage
Adjective	867	373.74	58.66
Noun	602	259.51	40.73
Verb	9	3.88	0.61
Total	1,478	637.13	100.00

The dominant meaning of the adjective *light*, found in 733 contexts, is ‘pertaining to the phenomenon of light’. The following examples illustrate this meaning:

(1) *light curve*
A single-body, non-homogeneous ablation code was developed, but proved unsuccessful at matching ***the observed light curve of the meteor****, even after a thorough search of parameter space.*
(source: Margaret Campbell-Brown, “Modelling a short-wake meteor as a single or fragmenting body”, *Planetary and Space Science*)

(2) *light scattering*
The computation of the ***light scattering properties*** *of size and shape distributed interstellar graphite dust analogues using discrete dipole approximation (DDA) is presented.*
(source: Manash Boruah, Ankur Gogoi & Gazi Ahmed, “Laboratory simulation and modeling of size, shape distributed interstellar graphite dust analogues: A comparative study”, *Planetary and Space Science*)

(3) *light yield*
We parameterize the ***total Cherenkov-light yield*** *as a function of energy, the longitudinal evolution of the Cherenkov emission along the cascade-axis and the angular distribution of photons.*
(source: Leif Rädel & Christopher Wiebusch, “Calculation of the Cherenkov light yield from electromagnetic cascades in ice with Geant4”, *Astroparticle Physics*)

The other meaning of the adjective *light* identified in the corpus is ‘not heavy’. This particular meaning occurs in 46 different contexts. Exemplary contexts are presented below.

(4) *light weight*
With the development of antenna technology, membrane antenna has become a research hotspot in aerospace field due to its ***advantages of light weight****, low cost and easy folding.*
(source: Liang Fan, Xiang Liu & Guo-ping Cai, “Dynamic modeling and modal parameters identification of satellite with large-scale membrane antenna”, *Advances in Space Research*)

(5) *light element*
We present new calculations of local-thermodynamic-equilibrium (LTE) ***light element opacities*** *from the Los Alamos ATOMIC code.*
(source: James Colgan et al., “Light element opacities from ATOMIC”, *High Energy Density Physics*)

(6) *light ion*
The theoretical and numerical study on the nonlinear propagation of heavy-ion-acoustic (HIA) shock waves has been carried out in an unmagnetized, collisionless dense plasma system (containing degenerate electron and ***inertial light ion fluids****, and positively charged static heavy ions).*
(source: Mufazzal Hossain et al., “Nonplanar ion-acoustic shock waves in degenerate plasmas with positively charged heavy ions”, *High Energy Density Physics*)

As some of the above examples indicate, an Adj + N combination may occur in the position of an adjective in a sentence, e.g. *light scattering* in the noun phrase *the light scattering properties* in (2) and *light ion* in the noun phrase *inertial light ion fluids* in (6).

We have found 67 different Adj + N combinations with the adjective *light*, including 17 combinations with the t-score value greater than 2 (see Table 5). In 11 of them, the meaning of *light* is associated with the phenomenon of light, whereas in 6, it means 'not heavy'. Table 5 presents the most frequent word combinations and their corresponding t-score values.

Table 5

Word combinations with the adjective light

Word combination	Number of occurrences	t-score
light curve	556	23.55
light source	30	5.22
light scattering	25	4.93
light travel	22	4.68
light yield	22	4.66
light time	30	4.62
light intensity	21	4.43
light weight	9	2.97
light element	9	2.88
light concentrator	8	2.82
light ion	10	2.82
light absorption	7	2.51
light detection	7	2.36
light mediator	5	2.23
light material	6	2.21
light component	7	2.15
light nucleus	5	2.12

Let us now consider the word combinations in which the meaning of the adjective *light* is related to the phenomenon of light. In this group, we can identify the combination *light curve* whose t-score value is greater than 10. The remaining ten-word combinations (i.e. *light source, light scattering, light travel, light yield, light time, light intensity, light concentrator, light absorption, light detection, light mediator*) exhibit lower collocation strength.

In the case of the six combinations with the adjective *light* meaning 'not heavy' (i.e., *light weight, light element, light ion, light material, light component, light nucleus*), all of them are classified as combinations with low collocation strength.

5.2. Dark.

The lexeme *dark* is used as either an adjective or a noun (see Table 6). The adjectival uses are the most common ones, constituting almost 92 per cent of the occurrences of this word.

Table 6

Dark: parts of speech

Part of speech	Raw frequency	Normalized frequency	Percentage
Adjective	1,473	634.97	91.49
Noun	137	59.06	8.51
Total	1,610	694.03	100.00

Used as an adjective, *dark* has only one sense, namely, 'devoid or partially devoid of light'. Here are several examples from the corpus:

(7) *dark matter*
Gravitational microlensing is a key probe of ***the nature of dark matter*** *and its distribution on the smallest scales.*
(source: Pierre Fleury & Juan García-Bellido, "On simple analytic models of microlensing amplification statistics", *Physics of the Dark Universe*)

(8) *dark energy*
The detection of low frequency band (100nHz–100mHz) and very low frequency band (300pHz–100nHz) gravitational waves (GWs) is important for exploration of the equation of ***state of dark energy*** *and the co-evolution of massive black holes (MBHs) with galaxies.*
(source: Wei-Tou Ni, "Dark energy, co-evolution of massive black holes with galaxies, and ASTROD-GW", *Advances in Space Research*)

(9) *dark sector*
Specifically, we consider ***a U(1)X dark sector*** *which contains two vector-like fermions besides the related gauge and Higgs fields.*
(source: Pei-Hong Gu, "*Mu*lti-component dark matter with magnetic moments for Fermi-LAT gamma-ray line", *Physics of the Dark Universe*)

In example (8), the abstract author employs two expressions containing lexemes which can be used interchangeably in some contexts (let us here recall part of the dictionary definition of *dark* presented in section 1: "wholly or partially black"): *dark energy* and *black hole*. These expressions are specialized terms, so no substitution is possible, but it will be interesting to investigate – in the future – whether *dark* and *black* are used interchangeably in word combinations which do not belong to specialized vocabulary.

We have extracted 22 distinct Adj + N combinations with the adjective *dark* from the corpus. For 11 of them, the t-score value is greater than 2 (see Table 7).

Table 7

Word combinations with the adjective dark

Word combination	Number of occurrences	t-score
dark matter	852	29.15
dark energy	487	21.91
dark sector	40	6.26
dark universe	18	4.12
dark fluid	17	4.06
dark spot	15	3.83
dark halo	10	3.09
dark gauge	6	2.38
dark disk	6	2.32
dark component	8	2.32
dark slope	5	2.10

In the collected set of word combinations, we can identify two combinations of high strength: *dark matter* and *dark energy*, for which the t-score values happen to be much greater than 10. Furthermore, there is one combination, *dark sector*, whose t-score value amounts to 6.26. For this reason, it falls into the category of medium strength. The remaining eight expressions (i.e., *dark universe*, *dark fluid*, *dark spot*, *dark halo*, *dark gauge*, *dark disk*,

dark component, *dark slope*) represent combinations of low collocation strength since their t-scores span from 2.10 to 4.12.

6. Discussion.

As the results of the study demonstrate the adjective *light* – as used in the abstracts of astrophysical texts – has either of the two meanings: (1) 'pertaining to the phenomenon of light' and (2) 'not heavy', whereas the adjective *dark* has only one sense, namely 'devoid of light'. The most frequent adjectival uses of *light* relate to the phenomenon of light, not to the qualities of being bright or pale. The identified expressions could be paraphrased as N *of light*, e.g. *light source* > *source of light*. On the contrary, *dark* – as used in the most frequent expressions – refers to qualities as it means '(partially) devoid of light' and 'of low lightness'.

Moreover, it turns out that the word combination with the highest t-score values happen to be scientific terms listed in the four dictionaries mentioned in section 4: *light curve*, *dark matter* and *dark energy*, which are defined in one of these dictionaries as follows:

light curve
"A graph on which the brightness of a variable star (or other varying astronomical object) is plotted against time" (Mitton, 2007, p. 200)

dark matter
"Matter in the universe that gives out no radiation and has so far been detected only by its gravity. Some of it is likely to be ordinary matter made from atoms containing neutrons and protons, but a large proportion is thought to be in the form of exotic elementary particles that hardly interact at all with radiation or with the neutrons and protons in ordinary atoms. About 23 percent of the total matter and energy in the universe is dark matter" (Mitton, 2007, p. 83)

dark energy
"the unknown source of a repulsive force which appears to pervade the universe. It opposes the tendency of gravity to slow down the rate at which the universe is expanding. Because of its effects, the expansion of the universe has been speeding up for the last 500 million years. Dark energy accounts for about three-quarters of the total energy and mass in the universe" (Mitton, 2007, p 83)

The dictionaries also list two other terms containing the adjective *light*, namely *light absorption* and *light ion*.

It should be pointed out here that the boundaries between collocations, fixed phrases and specialized terms are not always clear-cut (see, e.g. Nowakowska, 2001). Some word combinations may not have been listed in the four dictionaries, yet they apparently function as specialized terms. For instance, the expression *dark fluid* is employed when astrophysicists intend to jointly cover the phenomena referred to by *dark matter* and *dark energy*, e.g.

(10) *We assume that it is filled with* ***dark energy in the form of logotropic dark fluid coupled with dark matter*** *in the form of a perfect fluid having a barotropic equation of state.*
(source: Goutam Mandal et al., "Dynamical system analysis of logotropic dark fluid with a power law in the rest-mass energy density", *Physics of the Dark Universe*)

Similarly, we could classify other word combinations found in the astrophysical texts as specialized terms, e.g. *light scattering* and *dark universe*.

7. Conclusions.

The two types of corpus software, TagAnt and AntConc, enabled us to examine the frequencies of the adjectives *light* and *dark* in the corpus of abstracts of astrophysical papers. In addition, we were able to identify word classes and to extract the Adj + N combinations, which was connected with the primary goal of this research. It is evident that both adjectives are used with the meanings related to light. Moreover, the adjective *light* is also used in contexts where it means 'not heavy'.

The study indicates that the adjective *light* appears in more Adj + N combinations with the t-score values greater than 2 than the adjective *dark*. It should be pointed out, however, there is only one word combination, *light curve*, which has the t-score value greater than 10. In the case of the adjective *dark*, we have identified two-word combinations whose t-score values are greater than 10, namely, *dark matter* and *dark energy*. All the three expressions are listed as terms in specialized dictionaries.

It is worth mentioning that numerous expressions with *light* in the position of an adjective can be paraphrased. Instead of the expression *light source* (Adj + N), one may use *source of light* (N *of* N) (see, among others, Leech, 1981 [1974], pp. 19–20). The difference results from the choice of the grammatical pattern. Actually, *light* used as an adjective frequently means 'related or pertaining to the phenomenon of light', not directly referring to the qualities of being bright or pale. On the contrary, *dark* – as used in the most frequent expressions – refers to the quality of being '(partially) devoid of light' or 'of low lightness'.

As regards **prospects** for further research, we plan to investigate other lexemes which represent the category of adjectives whose meanings relate to visual perception. We intend to analyse the uses of colour terms employed in the astrophysical texts compiled in the corpus (for uses of colour terms in other sciences, see e.g. Gonigroszek, 2015; Pułaczewska, 2016; Stanulewicz & Radomyski, 2021; Zausznica, 2012). It will be interesting to examine whether *light* and *dark* are employed to modify colour terms, which of these words have the highest frequencies and – as has already been signalled – whether and if so, in what contexts, the two lexemes – *light* and *dark* – and colour terms are used interchangeably (e.g. *dark* and *black*).

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Анотація

Метою цієї статті є аналіз використання лексем ***світлий / light*** *і* ***темний / dark*** *в астрофізичних текстах. Дослідницькі питання стосуються не лише їхньої частоти та використання в спеціалізованих термінах, але й контекстах, у яких вони зазвичай вживаються. Головним чином нас цікавлять основні значення прикметників* ***світлий / light*** *і* ***темний / dark****, що є дотичними до зорового сприйняття.*

Для вирішення завдань дослідження авторами укладено корпус анотацій з дев'яти наукових журналів, що спеціалізуються на астрофізиці. Для створення корпусу використано програмне забезпечення AntConc Version 4.2.0.

Лексема ***світлий / light*** *трапляється в корпусі 1478 разів, у тому числі 867 разів як прикметник, тоді як лексема* ***темний / dark*** *трапляється 1610 разів, у тому числі 1473 рази як прикметник. До найбільш частотних словосполучень належать такі:* ***light curve, light source, light travel, light yield, light time, light intensity; dark matter, dark energy, dark sector, dark universe, dark fluid, dark spot, dark halo.***

Найбільш популярними словосполученнями, що містять лексеми ***світлий / light*** *і* ***темний / dark****, є наукові терміни, наприклад:* ***light curve, dark matter*** *та* ***dark energy****. Найчастотніше прикметникове вживання лексеми* ***світлий / light*** *має відношення до явища світла, а не до якостей «бути яскравим» чи «бути тьмяним». Ідентифіковані висловлювання можна перефразувати як* ***N of light*** *(де N – іменник), наприклад:* ***light source > source of light****. Навпаки, лексема* ***темний / dark****, використовувана в найпоширеніших висловленнях, належить до якості «позбавлений світла» та «низької яскравості».*

Ключові слова*:* ***світлий / light*** *і* ***темний / dark****, астрономія, астрофізика, словосполучення, корпусне дослідження, опозиція, термінологія.*