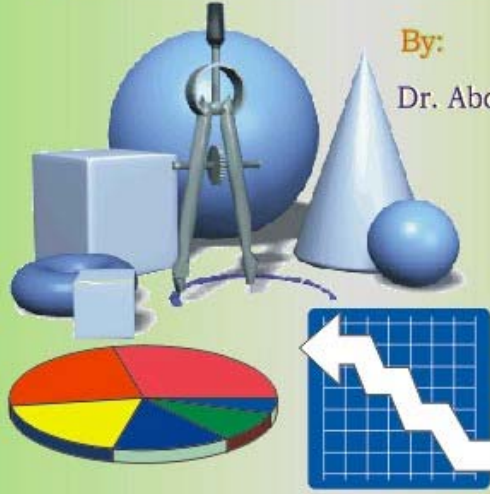




# IMAM AHMAD RAZA AND TOPOLOGY

By:

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Compiled By:  
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Courtesy:  
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## IMAM AHMAD RAZA AND TOPOLOGY

Imam Ahmad Raza Khan Barelvi is known throughout the world by his personality and work. His personality is so great that he needs no introduction. He fought against all heretic movements and Bida and succeeded. He was the leader of the Ahle Sunnat wa Jamaat.

He was a master jurist, a great theologian and he was the revivalist of the 14<sup>th</sup> Century Hijra. Besides having thorough knowledge in Islameology and theology, he was astonishingly well versed in ancient and modern Sciences, philosophy and mathematics. He has left about one hundred books and treatises in these branches of learning and knowledge.

Imam Ahmad Raza critically examined the theories of Aristotle, Ptolemy, Kepler, Galileo, Copernicus, Newton, I-lershal, Avicenna, Nediruddin Thai, Mulla Muhammad Jaun Puri, Albert E. Porta and Albert Einstein etc.

He made a name in the field of Mathematics. Dr. Sir Ziauddin, the Vice-Chancellor of Aligarh Muslim University, Aligarh, a renowned Mathematician of his age, attended Imam Ahmad Raza in search of a solution to a Mathematical problem and was completely satisfied. He has expressed his impressions thus:

“Such a great Scholar, I think there is none. Allah Ta’ ala has bestowed upon him such a Knowledge that is amazing. His insight in the field of mathematics, Euclid, algebra and timings is astonishing. A Mathematical problem that I could not solve despite my best efforts, this learned genius solved in a few moments.”

Dr. Barbara D. Metcalf, Berkeley University (America) Prof. Dr. Mohiuddin Alwai, Azhar University, Cairo (Egypt), Prof. Shabbir Ahmad Ghauri, Aligarh Muslim University, Aligarh, Prof. Abrar Hussain, Allama Iqbal Open University, Islamabad (Pakistan) and many others have confessed his skill and mastery in Science and Mathematics. Even Dr. Abdus Salam, the Nobel prize winner Scientist of Pakistan admired Imam Ahmad Raza's Logical and axiomatic interpretation of the arguments in the case of the - refutation of the revolving earth.

The learned scholar of Pakistan, Prof. Dr. Muhammad Masood Ahmed, in his article, with the reference to a letter of Prof. Abrar Hussain, has pointed out Imam Ahmad Raza's E great knowledge in 'Topology'.

The contents of the letter of Prof. Abrar Hussain is this, "Ala-Hazrat was a mathematician of a very high status. The study of '*Addaulatul Makkiyyh*' (which is very high beyond the approach of my understanding) confirms that he has given some proofs based upon mathematical theories which now-a-days belong to the Subject of "Topology". The full name of the Book Addaulatul Meccia is "*Addaulatul Makkiyya Bil-Maddatul Ghaihia*" which is a Chronological name. The book was written In 1323 Hijra / 1904 A.D. in Makkah, in eight hours in eloquent Arabic. d This masterpiece book of Imam Ahmad Raza is based upon the unseen knowledge of the Prophet

Now I come to the question of what topology is? The concept of topological space grew out of the study of the real line and Euclidean space and the study of continuous function on the spaces.

The definition of a topological space that is now standard was a long time in being formulated. Various X

mathematicians - "Frechet, Hansdroff" and others proposed different definitions over a period of years during the first decade of this century, but it took a while before mathematicians settled on the one that seemed most suitable?

Before knowing something about topology or having its general idea, one should have a general idea of the "Set theory".

"Set theory" was introduced by a German mathematician - George Cantor, born in 1845. He introduced this theory in the 8th decade of the 19th Century. The definition of a 'Set' given by Cantor is: "A Set is a collection into a whole of definite, distinct and distinguishable objects of our perception or our thoughts".

In a simple way, the set is the well-ordered collection of things, objects or numbers. The objects, things or numbers which form a set are called elements or objects.

### Examples:

If we say, there is a set of natural numbers 1, 2, 3, 4; we shall write it as:

$$A = (1, 2, 3, 4)$$

Here A denotes set.

In the same manner, we shall use B, C or X, Y, Z etc to denote set and a, b, c ... or x, y, z etc to denote elements.

The set of English alphabets a, b, c... z

Then  $A = \{a, b, c, \dots, z\}$ . A set of 26 letters.

We can make sets of animals, cities and fruits etc. as

(i)  $A = (\text{Cow, Horse, Camel, Elephant})$ .

(ii) (ii)  $B = \{\text{Bareilly, Delhi, Lucknow, Karachi, Lahore}\}$ .

(iii)  $C = (\text{Mango, Apple, Banana})$ .

if x is an element of a set A; we shall write it as  $x \in A$   
i.e. x belongs to A.

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## TYPES OF SET

### 1. Finite set:

If the numbers of the elements in a set is finite (i.e. countable), it is called the "Finite Set".

Ex :-(i) The set (1,3,9,27) is a finite set because the number of its elements is four.

(ii) The set (3, 5, 7 ... 13) is a finite set because the number of its elements is finite.

### 2. Infinite set

A set is infinite if it is not finite.

(a) It is said to be countable infinite if there is a bijection correspondence.,

(b) A set is countable if it is either finite or countable infinite.

(c) Uncountable set:- A set is called uncountable if its elements are uncountable or all its subjects are uncountable.

### (3) Singleton set:-

The set having only one element is called the singleton set (X).

(4) Null or empty set:

The set having no element is known as Null or Empty set and is denoted as  $\emptyset$ .

(i) The set of a number greater than 4 and smaller than 5 is a Null set.

(ii)  $A = \{X\}$  X; at present a man aged more than 300 years in the World is an Empty set.

## SUBSET

If every element of the set B is the element of the set A, then B is called the subset of A.

We denote it as  $B \subseteq A$  or  $A \supseteq B$ .

$B \subseteq$  means B is the subset of A or B is contained in A and  $A \supseteq B$  means A contains B.

Ex. (I) If set  $B = \{2, 4, 8\}$ ; Set  $A = \{2, 4, 6, 8, 10\}$ .

Then B is subset of A because every element of B is contained in A.

(ii) The students of class XI is the subset of the set of Students of the College.

Note:- (a) - Any set is always the subset of itself.

(b)  $\emptyset$  is the subset of every set.

(c) - If B is not the subset of A, then we write it as  $B \not\subseteq A$  (B is not the subset of A).

### Proper Subset:

Suppose  $A = \{1, 2, 3, 4\}$  and  $B = \{1, 2, 3, 4, 5, 6\}$ .

Here A is the Subset of B but B is not the Subset of A in such case we say that B is the proper subset of A and write it as  $A \subset B$ .

### Family of Sets:- (Collection of Sets)

If the elements of any set are themselves sets; then that set is called the family of sets or Collection of Sets.

### For example:

$X = \{(a), (a, b), (a, b, c)\}$  is a family of sets.

**Another example:-**

Suppose there is a Razvi set (means the set of Razvi Silsila (Sairtly line) i.e. elements are Hamidi, Mustafai and Amjadi then = (Hamidi, Mustafai, Amjadi).

Here Hamidi, Mustafai and Amjadi are also Sairtly lines and hence these elements are themselves sets and therefore the Razvi Set is the Collection of sets or Family of Sets.

**Power Set:**

Suppose there is a set A. We may consider sets whose elements are subsets of A. In particular we can consider the set of all subsets of A. This set is sometimes denoted by the symbol  $P(A)$  and is called the Power set of A.

**Example:**

If  $A = (1, 2)$ ; then  $P(A) = \{\emptyset, \{1\}, \{2\}, \{1, 2\}\}$

The set which is the collection of subsets of a set A; is called the Power Set.

**Union of Sets:**

The union of two sets A & B is the set of all the elements present in A & B. The symbol U is used for union such as A union B = AUB. It is also read as AUCB.

Ex. (1) If  $A = (a, b, c)$  &  $B = (b, c, x)$   
Then  $AUB = (a, b, c, x)$



Ex-(2) If  $A = \{1, 2, 3\}$  &  $B = \{1, 3, 5, 7\}$   
 Then  $A \cup B = \{1, 2, 3, 5, 7\}$

### Intersection of sets:

The intersection of sets  $A$  &  $B$  is the set of those elements which are common in  $A$  and  $B$ . It is written as  $A \cap B$ .

Ex:- If  $A = \{1, 2, 3, 4\}$  &  $B = \{0, 1, 4, 5\}$   
 Then  $A \cap B = \{1, 4\}$

### NOTE:

The set theory is very complicated and wide too. I have given here a general idea of the set theory to follow this article, connected with topology, easily.

## TOPOLOGY

A topology on set  $X$  is a Collection  $T$  of subsets of  $X$  having the following properties.

- (1)  $\emptyset$  and  $X$  are in  $T$ .
- (2) The union of the elements of any sub collection of  $T$  is in  $T$ .
- (3) The intersection of the elements of any finite sub collection of  $T$  is in  $T$ .

### KINDS OF TOPOLOGY

#### (1) Discrete topology:

If  $X$  is any set, the collection of all subsets of  $X$  is a topology on  $X$  it is called Discrete topology.

**(2) Indiscrete topology: -**

The collection consisting of  $X$  and  $\emptyset$  only is also a topology on  $X$ , we shall call it Indiscrete topology or the trivial topology.

**(3) Finer topology: -**

Suppose that  $T_1$  and  $T_2$  are two topologies on a given  $T$ , set  $X$ . If  $T_1 \supseteq T_2$ ; we say that  $T_1$  is finer than  $T_2$ . If  $T_1$  properly contains  $T_2$  we say that  $T_1$  is strictly finer than  $T_2$ .

**(4) Coarser topology:-**

We also say that  $T_1$  is Coarser than  $T_2$ , or strictly coarser in these two respective constructions.

**(5) Finite complete topology: -**

Let  $X$  be a set. Let  $\mathcal{T}_f$  be the collection of all subsets of  $X$  such that  $X - U$  either is finite or is all of  $X$ .

Then  $\mathcal{T}_f$  is a topology on  $X$ , called the "Finite complete topology". Both  $X$  and  $\emptyset$  are in  $\mathcal{T}_f$ .

Since  $X - \pi$  is infinite and  $X - \emptyset$  is all of  $X$ .

Now we come to our main point. Discussing Knowledge of Allah, Imam Ahmad Raza says, "Allah knows His own person, His infinite qualities, all events which have happened, all events which shall remain happening for ever and for ever and all the possibilities which never occurred nor will ever occur, all the states, and all the understanding in fullest detail from the beginning to the end. His personality is infinite and so are His qualities. His every quality is infinite and so are His qualities. His every quality is infinite and every number associated with Him has infinite progression, His days are infinite, His

hours and every moment of His time is infinite. His provision of Paradise is infinite. His punishments in Hell are infinite and every punishment is infinite, the breaths of the inhabitants of Paradise and Hell, their slightest movements, and all other things associated with them are infinite. Allah knows all and every thing in the beginning and for ever in all their details. In His knowledge the succession of infinite numbers occurs infinite times in every particle His knowledge is infinite. Every particle which has passed or will pass, or is possible, is related to each other in proximity and distance and reason from the beginning to the ultimate time; all this knowledge is actively comprehended by Allah. His knowledge is of the third power of the infinite:

(Infinite) <sup>3</sup> (English translation).

(1) On the marginal notes (footnotes) on page 183 and page 124 in the book (*Addaulatul Makkiyya*), in connection with the numbers associated with Allah, Imam Ahmad Raza also makes clear that every number associated with Allah is infinite.

Progression and for them he puts up many examples such as: -

- |  |   |
|--|---|
| (1) 1, 2, 3, ... $\infty$                        | (2) 1, 3, 5, ... $\infty$                           |
| (3) 2, 4, 6, .... $\infty$                       | (4) 1, 4, 7, ..... $\infty$                         |
| (5) 2, 5, 8, 11... $\infty$                      | (6) 5, 9, 13, ... $\infty$                          |
| (7) 1, 4, 9, 16, ... $\infty$                    | (8) 1, 8, 27, 64, .... $\infty$                     |
| (9) $\sqrt{1}, \sqrt{2}, \sqrt{3}, \dots \infty$ | (10) 1, $\frac{1}{2}$ , $\frac{1}{3}$ .... $\infty$ |
- and so on...

Whether we disorder the numbers or order them in an form which is possible, the numbers will have infinite progression. In other words we may state that the set of the numbers of any form will be infinite and uncountable. If we select any set of the numbers of any form (The

infinite set) will be after all a set and its collection will of course consist in this set.

$\emptyset$ , the Null set belongs to every set and therefore it will belong to this set too.

In such case we also find a topology on the set and will be called “Indiscrete or Trivial topology”.

(2):- Now discussing the knowledge of the creature and differentiating it from the knowledge of Almighty Allah, Imam Ahmad Raza says, “The knowledge of a creature will always be finite in action, even if it is the knowledge from the heavens to the earth, from the first to the last multiplied by a million, because the heaven and the earth are two corners and the first and the last day are two limits and everything which lies between the two is finite. The meaning but not the reality of the infinite can be attached to the knowledge of a creature provided he is not stopped in the future. But the infinite in action is only appropriate for Allah because the knowledge of Allah and His qualities are free from the necessity of birth.” (English translation).

Here Imam Ahmad Raza says that the knowledge of a creature though infinite in appearance, yet will be finite in reality.

Here Imam Ahmad Raza puts finite sets or countable infinite sets.

In such case, we may clearly find all its subsets and hence may have the collection  $T$  of these subsets.

Such that (a)  $\emptyset \in T$  and  $X \in T$ .

(b) The union of elements of any sub collection of  $T$  and

(c) The intersection of the elements of any finite sub collection of  $T$ ; and thus there will be also a “topology” on the set.

(3) Imam Ahmad Raza further says, “If the knowledge of all and every creature from the first to the last is gathered, the collection will have no relation to the knowledge of Allah even in the proportion of a drop related to one million oceans, because the portion of the drop is finite and the finite is always related to some other finite in some manner. Thus if we remove the portion of the drop successively from the collections of the oceans, a day will arrive when the ocean will be exhausted because they are finite. But if from the infinite we remove any portion however large successively, the remainder will always be infinite and it will never relate to the finite.” (Translation).

Here Imam Ahmad Raza clarifies that the knowledge of a creature will never relate the knowledge of Allah as the knowledge of Allah is infinite in action and the knowledge of the creature, though not stopped is yet finite. He also puts the theory:- Infinite - finite + infinite.

Here we also find the finite set or countable infinite set, and thus according to the definition of the topology

- (a)  $T \in \mathcal{T}$ ;  $\emptyset \in \mathcal{T}$  (Set)
- (b) The union of the elements of any such collection of  $T \in \mathcal{T}$
- (c) The intersection of the elements of any finite sub collection of  $T \in \mathcal{T}$ .

Thus here is also the “topology on the set”. This is an example of Imam Ahmad Raza’s skill in modern mathematics (about topological theories) which he has applied in a religious discussion and how astonishing and admirable it is that a Molvi be so expert in mathematics.

## References:

1

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7. James R. Munkers:- *Topological Space*, P-75.
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9. English translation of the passage (Urdu) of the book "*Addaulatul Makkiyya*", Page 109 to 194; by Imam Ahmad Raza.
10. Ibid, P 195 to P 19.