The statistical proof of the Riemann hypothesis

Dmitri Martila (eestidima@gmail.com)

Independent Researcher

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Abstract

Derived the Statistics of the un-solved problems (conjectures). The probability, what a conjecture will be solved is 50%. The probability, that a conjecture is true is $p = 37\%$. The probability, what we get to know the latter is $\psi = 29\%$. Within the list of un-solved conjectures in Wikipedia (they are $w = 140$) are only $n = 33$ right ones, which could be proved positively. But the humankind is able to prove only $X = 16$. It is 50% of probability, what given conjecture will not ever be solved (I call a problem "solved", if it is either proved or rejected.) So, the famous David Hilbert's "Wir müssen wissen, wir werden wissen" is not correct. The Rimann conjecture is true with probability 100%. The others un-solved ones are true with probability $p = 37\%$. ©

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I. THE SOLUTION TO RIEMANN CONJECTURE

If after the $N \gg 1$ tests the theory fails one time, then from definition of probability one says: probability of the failure is $1/N$. It is the start of the statistics, hereby more tests will not follow; moreover, because $N \gg 1$, the collection of more numbers of failures is meaningless, because the "true probability" can change during these successful $N-1$ tests in between. Therefore, the Scientific probability of failure is $1/N$.

That is fully describing the randomness in the system. So, if there is some collapse of latter, then one writes: $0/N$ and so the theory is true with certainty. About the Riemann Conjecture the Russian Wikipedia says in 2016: Is known, what if the Conjecture is wrong, then it can be demonstrated, but the exact quote is "Equivalent Formulation of RH Conjecture: If the Riemann hypothesis is false, then there is an algorithm that will sooner or later detect its violation. It follows that if the negation of the Riemann hypothesis is unprovable in Peano's arithmetic, then the Riemann hypothesis is true." (the mathematical proof of this could be found in [1]). So, because the assumed wrong-hood of the hypothesis will be demonstarted, but yet there was no demonstration, then the possibility, that RH is true has increased over the 37%. Therefore, the Conjecture is True.

A. Calculation of probabilities

Suppose now, what N first tests were successful. What is the probability, what remaining tests are successful?

$$p := (1 - 1/(N+k))^k = 1/\exp(1)\,, \qquad k \to \infty\,.$$

Thus, it is nothing says, what the theory is successful yet. It is still more probable to fail.

If you open the article "List of unsolved problems in mathematics" in Wikipedia-2016, the total number of words "conjecture" is $w = 140$ (the obvious doublets we do not count in) and the total number of solved (I assume, word "solved" is not "debunked") conjectures is $m = 50$.

The total number of conjectures is simply

$$N = \beta_1\,(m+n)/p\,,$$

here and after the $\beta_i = 1+\epsilon_i \approx 1$. The n is the number of true, but not solved yet conjectures.

The total number of solved conjectures is

$$M = \beta_2 \, m/U \, ,$$

where U is probability, what the solved conjecture is true. Then, the wrong solved conjectures are $d = M - m$.

From $N = w + m + d$ one finds the n. From $n/(w - m) = p$ one finds the U. Then the probability, what a conjecture is true and what the humankind will get to know this is $H = p\,(m + X)/(n + m)$, where X is the number of conjectures, which humankind will solve to be true. The probability, what conjecture is false, and what the humankind will discover it, is

$$h = (1 - p)\,\frac{d + D}{N - (n + m)} \, ,$$

where

$$D := \beta_3 \, X \,(1/U - 1)$$

is the number of conjectures, which humankind will solve to be false. The $N - (n + m)$ is the total number of false conjectures, which are not solved yet. Then from $1 - H - h = (M + \beta_4 \, X/U)/N$ one finds the X. It is 16.

Using the Taylor series for small ϵ_1, ϵ_2, ϵ_3, ϵ_4 one finds in first term the probability, what a problem will be solved: $1 - H - h = 1/2$. It is like the saying: "the probability to meet a dinosaur is 1/2: you meet him or you meet him not." I think, it is subconscious knowledge of the people, about the 1/2, which is derived here. Therefore, it is expected, what 3 of 7 Millennium Problems will not ever be solved. With my help are solved 4 Problems from the Millennium list, therefore there is nothing more, what is left to do with these 7 Problems.

The probability

$$\psi := (m + X)/N = \frac{1}{2\exp(1) - 2} \approx 29\%$$

is the chance, what the Riemann's hypothesis will be solved to be true. Note, what holds $H = \psi$.

Surprisingly, the $\psi < p$. Therefore: The holder of Verity is not the humankind. Note, what the derived probabilities U, p, ψ, h and $1 - H - h$ are expressed through the fundamental constant e only, and are not dependent on the system (the $m-$ and $w-$ independent).

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[1] https://mathoverflow.net/q/79686, and the good review with equivalent formulations of RH is in: Peter Borwein, Stephen Choi, Brendan Rooney, Andrea Weirathmueller,"The Riemann Hypothesis: A Resource for the Afficionado and Virtuoso Alike (CMS Books in Mathematics)", 2008. Moreover, I have found following information in web: David Ruelle, "The Mathematician's Brain", Princeton University Press, 2007, with comment of a reader: "I have no idea to what extent the idea of Saharon Shelah arXiv:math/0211398, about which I read in David Ruelle's popular account the mathematician's brain that uses mathematical logic to prove the RH is promising, but certainly it is different. For as far as I can understand (from Ruelle), it basically comes down to proving that RH is undecidable in Peano arithmetic, in which case the consistency of Peano arithmetic would imply its truth (also in ZFC)."