
American Aires Inc.
Research and Development department

REPORT

**R&D: Calculation of the strength and intensity of the
electromagnetic field in the interaction of electromagnetic
radiation at a frequency of 2.4 GHz (WiFi)
with an Aires K8 resonator (microprocessor), which is used in the
Aires Shield Extreme (2016 model)**

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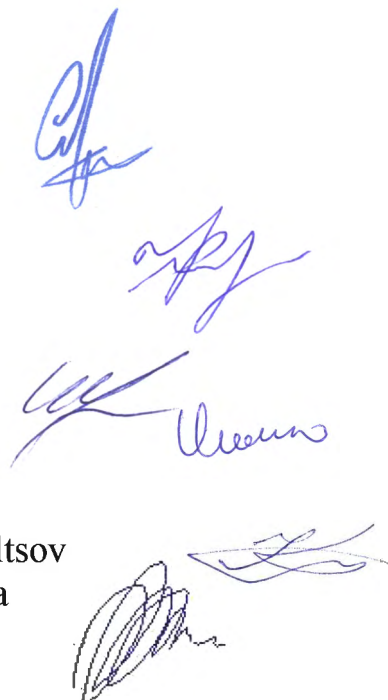
A collection of handwritten signatures in blue ink, corresponding to the project manager, responsible researcher, researchers, and consultants listed on the left. The signatures are arranged vertically, with some overlapping.

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INTRODUCTION

To simulate the processes occurring in the interaction of Aires resonators (microprocessors), which are manufactured using Micro-Electro-Mechanical Systems (MEMS) technology, with electromagnetic radiation, physical models of such interaction, as well as algorithms and computer programs based on them, were developed.

This software development was necessary, because the various software packages available on the market generally consider interactions in the context of classical physics. However, a number of studies have shown that the processes taking place in this case can only be explained by accounting for the counter wave interaction on the surface of the resonator and the numerous derivative resonances that result from these processes. Existing packages do not take these factors into consideration.

The following experiment with the Aires resonator (microprocessor) showed the possibility of using it in a new class of devices used in medicine, energy conservation, and protecting humans from man-made electromagnetic radiation.

This report discusses the interaction of electromagnetic radiation at a frequency of 2.4 GHz with an Aires resonator (microprocessor) with the K8 topology (Appendix 1), which is used in the Aires Shield Extreme (2016 model). The calculations were made on hardware using software (Appendix 2).

In order to most closely approximate specific technical problems: the design of the simulated element, the range of electromagnetic radiation corresponding to the frequency of a WiFi router (2.4 GHz) and other modern mobile communication devices, the following physical model was considered in the simulation.

1. PHYSICAL MODEL

The Aires resonator (microprocessor) is a type-n monocrystalline silicon substrate with a crystallographic plane of 100 (Miller index), with dimensions of 7.5 mm x 7.5 mm and a thickness of 0.5 mm, whose surface has a fractal system of annular slits with a rectangular cross section with a width of 0.4 μm and depth 0.8 μm , forming a regular self-affine structure that obeys the laws of self-similarity and scale invariance (Appendix 1).

When the resonator interacts with the radiation incident on its surface, a surface wave appears and is reflected from the surface with absorption in the slits, which leads to a redistribution of the characteristics of the electromagnetic field. The resonator's slit structure can be considered as a regular topology of the surface of a self-affine silicon wafer (substrate).

Both the distribution of the electric field strength above the resonator surface and the distribution of the field's energy flux density (intensity) were modeled.

2. MATHEMATICAL MODEL

To describe the current calculation model, it is assumed that the source radiation falls on the AIREs resonator (microprocessor) uniformly from all sides. Thus, we have a radiation source in the form of a hemisphere with radius R , which is significantly greater than the diameter of the resonator.

The radiation is distributed along the DCA trajectory (Fig. 6). Point D is on the sphere with radius R . Point C is on the resonator wafer. Point A is on the receiver (the space above the resonator wafer), and the strength of electric field E is determined at this point. Point C has 2 possible locations – in the slit and on the surface of the resonator. If point C is on the surface, then the incident radiation at point C is reflected (the angle of incidence is equal to the angle of reflection). If point C is in the slit, then the incident radiation at point is absorbed.

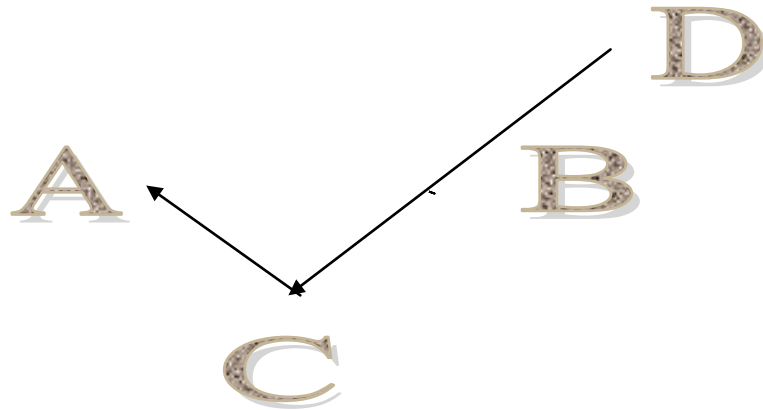


Fig. 6. Trajectory of the incident radiation DCA.

The smooth surface of the resonator is broken into square cells with side h and point C successively (in a cycle) traverses every node in this two-dimensional grating. The receiver is the three-dimensional space around the resonator, divided into cubic cells with side h and point A successively (in a cycle) traverses every node in this three-dimensional grating. At each time t , the coordinates of points A (on the receiver) and C (on the resonator) are assumed to be known.

We assume that we know the intensity of the incident radiation E_0 and the frequency of the radiation ω at point D (radiation source).

We need to find: the strength of electric field E at point A (receiver).

If the coordinates of points A (x_A, y_A, z_A) and C (x_C, y_C, z_C) are known, then the coordinates of point B (x_B, y_B, z_B) can be determined using the following formulas:

$$x_B = 2x_C - x_A$$

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$$y_B = 2y_C - y_A$$

$$z_B = z_A$$

Point B is symmetric to point A in the DCA plane relative to the normal to the resonator's surface at point C.

Equation for the line segment BC:

$$\frac{x - x_C}{x_B - x_C} = \frac{y - y_C}{y_B - y_C} = \frac{z - z_C}{z_B - z_C}$$

Equation for the line segment AC:

$$\frac{x - x_C}{x_A - x_C} = \frac{y - y_C}{y_A - y_C} = \frac{z - z_C}{z_A - z_C}$$

Distance between points A and C:

$$L1 = \sqrt{(x_A - x_C)^2 + (y_A - y_C)^2 + (z_A - z_C)^2}$$

Coordinates of vector CA:

$$x_{CA} = x_A - x_C$$

$$y_{CA} = y_A - y_C$$

$$z_{CA} = z_A - z_C$$

Direction cosines of vector CA

$$\cos(CA_x) = x_{CA}/L1$$

$$\cos(CA_y) = y_{CA}/L1$$

$$\cos(CA_z) = z_{CA}/L1$$

Equation for sphere with radius R with center at (x_0, y_0, z_0) (coordinates of the center of the resonator):

$$(x - x_0)^2 + (y - y_0)^2 + (z - z_0)^2 = R^2$$

The coordinates of point D (x_D, y_D, z_D) , the intersection of line segment BC and the sphere with radius R , are determined from the following system of equations:

$$\frac{x - x_C}{x_B - x_C} = \frac{y - y_C}{y_B - y_C} = \frac{z - z_C}{z_B - z_C}$$

$$(x - x_0)^2 + (y - y_0)^2 + (z - z_0)^2 = R^2$$

Distance between points C and D:

$$L2 = \sqrt{(x_D - x_C)^2 + (y_D - y_C)^2 + (z_D - z_C)^2}$$

The length of the DCA is equal

$$L = L1 + L2$$

The sphere with radius R radiates a monochromatic wave with frequency

$$\lambda = \frac{2\pi V_C}{\omega} \quad \text{and wavelength } \omega \quad \text{and speed of light } V_C.$$

At time t , the strength of the electric field (created by the DCA beam) at point A is equal to

$$E = E_0 \cos(\omega(t - \frac{L}{V_C}))$$

where E_0 is strength of the incident radiation.

The projections of E (created by beam DCA) on axes X, Y and Z at point A at time t are equal to:

$$E_x = E \cos(CA_x), E_y = E \cos(CA_y), E_z = E \cos(CA_z)$$

The projections of E (created by the resonator) on axes X, Y and Z at point A at time t are equal to the amount of the projections of E (created by beams DCA), where point C passes each node of the square cells into which the resonator is divided:

$$E_x^{resonator} = \sum_{resonator} E_x \quad E_y^{resonator} = \sum_{resonator} E_y \quad E_z^{resonator} = \sum_{resonator} E_z$$

The strength of electric field E (created by the resonator) at point A at time t is equal to

$$E_A^{resonator} = \sqrt{(E_x^{resonator})^2 + (E_y^{resonator})^2 + (E_z^{resonator})^2}$$

Given time change Δt , we can calculate the strength of electric field E at any point of the receiver at any point in time.

The results are output as 4-dimensional matrices (the coordinates of the point at which E is calculated, and the time):

$$E_A^{resonator}, E_x^{resonator}, E_y^{resonator}, E_z^{resonator}$$

To following formula is used to account for diffraction:

$$\frac{I_\beta}{I_0} = \frac{\sin^2(\frac{\pi b}{\lambda} \sin \beta)}{(\frac{\pi b}{\lambda} \sin \beta)^2},$$

where I_β is the intensity of waves propagating at an angle β , I_0 is the intensity of waves propagating at an angle $\beta=0$, b is the width of the slit, β is the angle, λ is the wavelength. Because the intensity of the wave is proportional to the square of the amplitude,

$$\frac{I_\beta}{I_0} = \frac{E_\beta^2}{E_0^2} = \frac{\sin^2\left(\frac{\pi b}{\lambda} \sin \beta\right)}{\left(\frac{\pi b}{\lambda} \sin \beta\right)^2},$$

$$E_\beta = E_0 \frac{\sin\left(\frac{\pi b}{\lambda} \sin \beta\right)}{\frac{\pi b}{\lambda} \sin \beta}.$$

Thus, in the end in general we have a vector E :

$$\vec{A} = E_{otr} + \vec{A}_{difr},$$

where E_{otr} is due to reflection, E_{difr} is due to diffraction (in the case of narrow slits).

CALCULATION PARAMETERS

1. The topological circuit of the Aires resonator (microprocessor) is considered a self-affine annular diffraction grating made in the form of slits with the following dimensions: $0.6 * 10^{-6}\text{m} \times 0.6 * 10^{-6}\text{m}$ ($0.6 \mu\text{m} \times 0.6 \mu\text{m}$, width and depth).
2. Resonator dimensions: $7.5 * 10^{-3}\text{m} \times 7.5 * 10^{-3}\text{m} \times 0.5 * 10^{-3}\text{m}$ ($7.5\text{mm} \times 7.5\text{mm} \times 0.5\text{mm}$).
3. The resonator interacts with the radiation emitting from the WiFi-source (router) in the form of a large-diameter hemisphere (the diameter of a sphere larger than the wafer dimensions). The distance from the source to the resonator is 10 m.
4. The surface of the resonator reflects radiation (absorption is not considered), but the slits absorb (reflection in the slits is not considered).
5. Parameters of the incident radiation:
 - strength $E_0 = 10 \text{ V/m}$; (manufacturer data)
 - frequency $\omega = 2.4 \text{ GHz}$.
 - field strength $E \sim \omega^2 = (2.4 \text{ GHz})^2 \sim 5.76 \text{ (W/m)}$;
 - flux density $I \sim \omega^4 = (2.4 \text{ GHz})^4 \sim 0.33 \text{ (W / m}^2\text{)}$.
6. The resonator surface is divided into square cells in increments of $h = 28 * 10^{-6}\text{m}$ ($28 \mu\text{m}$).
7. The resulting radiation is calculated in the space above the resonator, divided into cubic cells with an increment of h .
8. The electromagnetic radiation interacts with the resonator for $t = 1 \text{ s}$.
9. The time spent on the calculations is 120 machine-hours.

4. Algorithm for the calculation

The algorithm for the calculation generally looks like this:

1. An Aires resonator (microprocessor) with the K8 topology (Appendix 1) is located in the center of the cubic matrix, i.e. the dimension of the matrix is the same along all axes X, Y, and Z. Calculations are performed for the upper half of the cubic matrix. Then the results are mirrored for the lower half. As a result, we obtain a matrix that is symmetric with respect to the plane on which the resonator is placed, and a cubic matrix of the results of the initial strength calculation E .

2. To record the spatial representation of the relevant processes, in this stage we take the matrix and add copies of it that have been rotated 45° about the X, Y, and Z axes and sum up the results. In the resulting cubic matrix, we identify the general sphere-shaped area that contains all summed elements, and we call it "Derivative 1".

3. Next we project "Derivative 2", with center at the origin (the center of the resonator) and radius $R1$, by a distance equal to radius $R1$ in 26 directions and sum the results (27 spheres). We end up with a cubic matrix that contains a sphere with radius $R2=2*R1$, which we call "Derivative 2".

5. RESULTS AND DISCUSSION

In accordance with the algorithm, the calculations were performed in 3 stages. The result of the first stage is a matrix of the strength of the electric field E over the resonator.

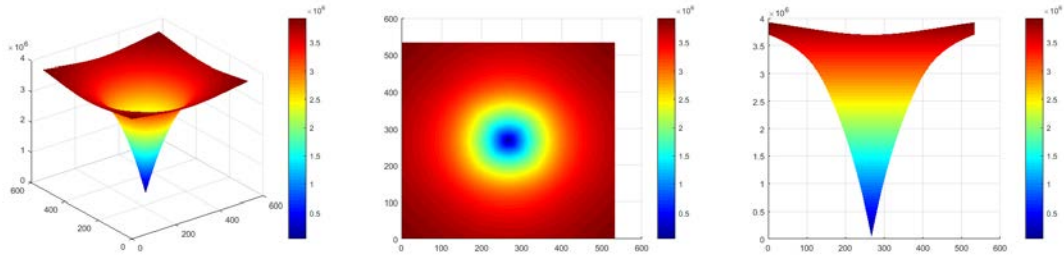


Fig. 1. Central section, range $E = 0 \div 4 \cdot 10^6$ (norm. un.)

The distribution of the electric field strength occurs symmetrically from the center of the resonator, where $E = 0$ (V/m), to the edges, where the strength reaches $E = 4 \cdot 10^6$ (norm. un.).

To convert the normalized units to the SI system, the normalization coefficient was derived for the current calculation model: $K_{norm} = 1.4 \cdot 10^{-6}$. Accordingly, the range $E = 0 \div 5.6$ (V/m) (Fig. 1).

The 2nd step of the calculation is "Derivative 1".

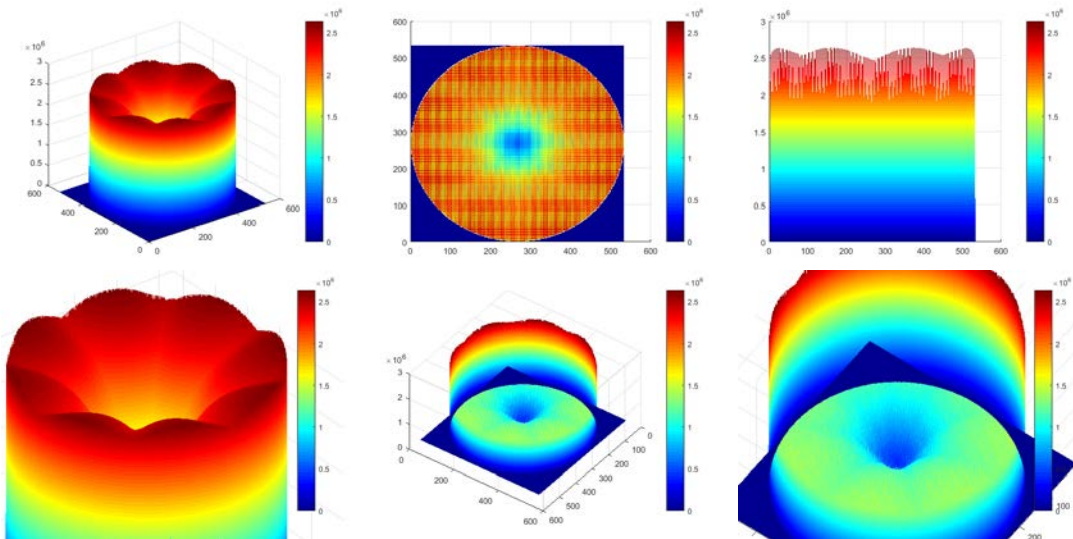


Fig. 2. Central section, range $E = 0 \div 2.6 \cdot 10^6$ (norm. un.)

After the introduction of the three additional coordinate systems, arranged relatively orthogonal at 45° , there was a refinement of both the distribution

diagram and the field strength parameters $E = 2.6 \cdot 10^6 \cdot K_{norm} = 3.64$ (V/m) relative to the initial matrix obtained in the 1st stage of the calculation (Fig. 2).

The calculations of the third stage obtained a distribution of strength E and intensity I of the electromagnetic field in three-dimensional space (Fig. 3, 4).

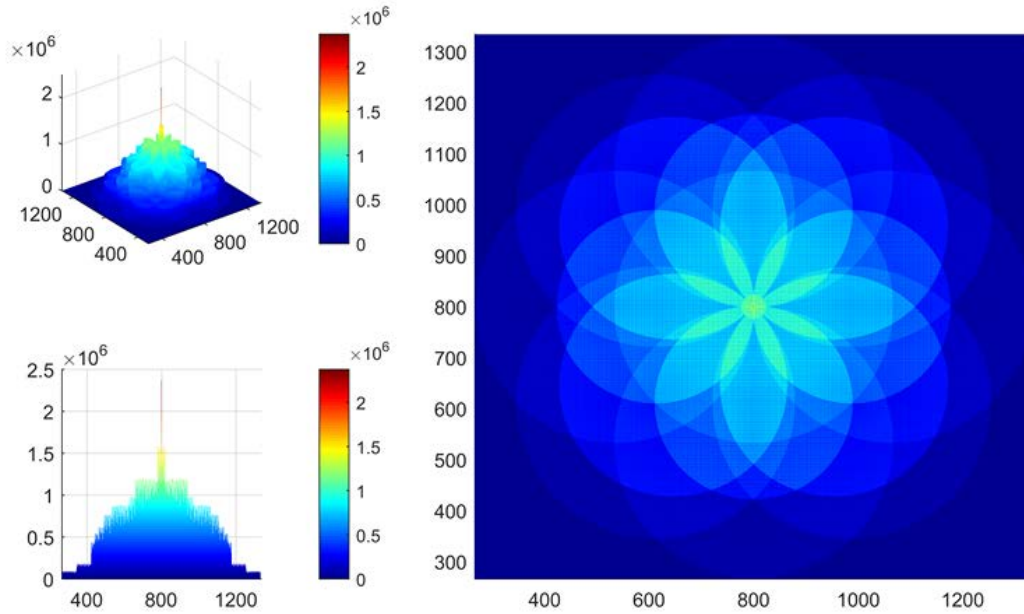


Fig. 3. Central section. Distribution of strength E (norm. un.) in different projections

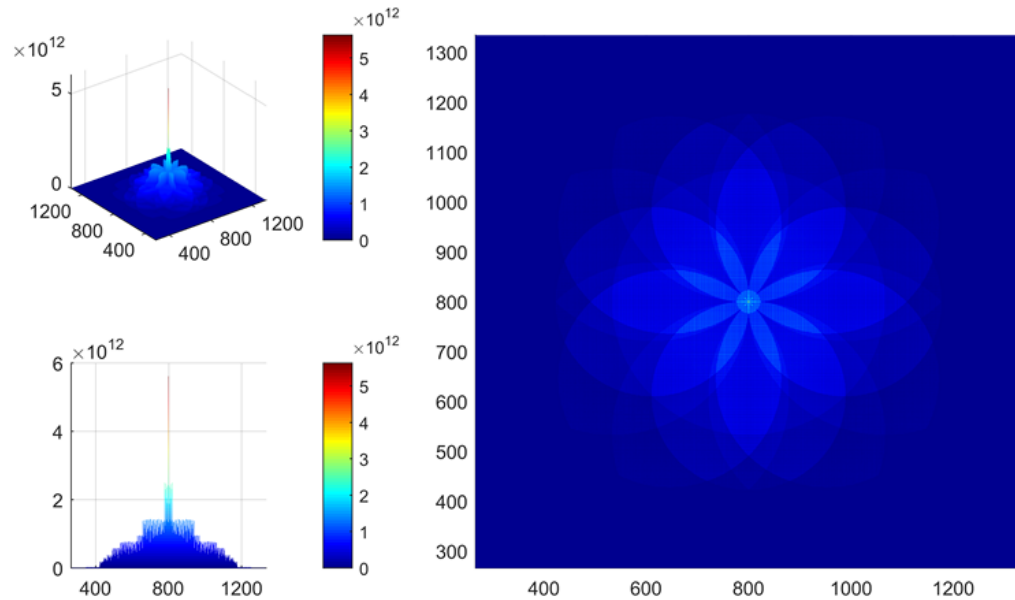


Fig. 4. Central section. Distribution of intensity I (norm. un.) in different projections

Figures 5-30 show the distribution of strength E and intensity I arising from the resonator of the field reflex with a height of 14.896 mm in various horizontal sections with a step of $20h$ (0.56 mm) from the surface of the resonator.

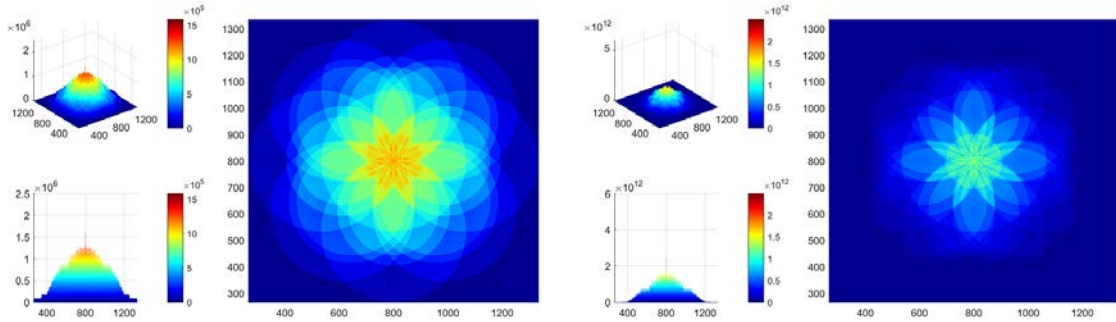


Fig. 5. Strength (on the left) and intensity (on the right) at level 20 (0.56 mm)

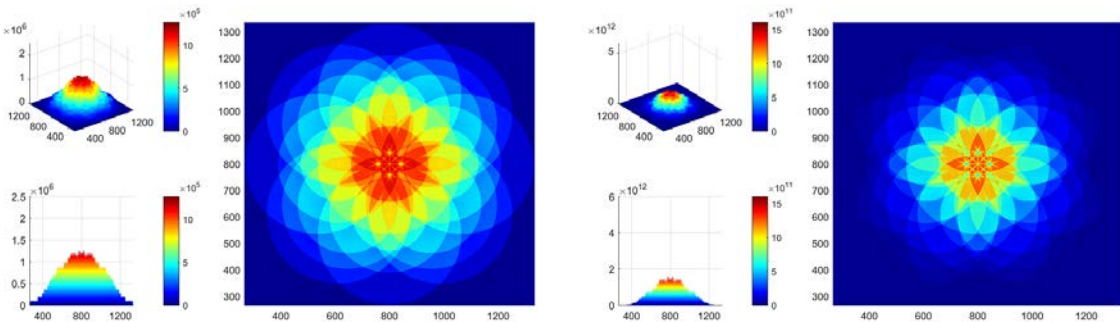


Fig. 6. Strength (on the left) and intensity (on the right) at level 40 (1.12 mm)

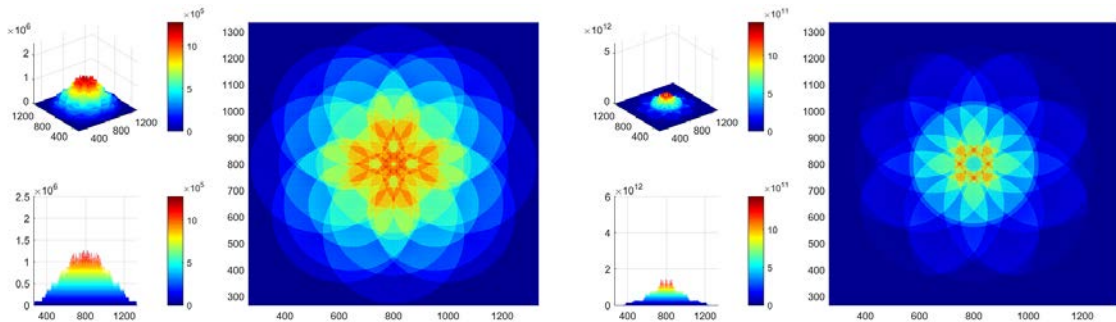


Fig. 7. Strength (on the left) and intensity (on the right) at level 60 (1.68 mm)

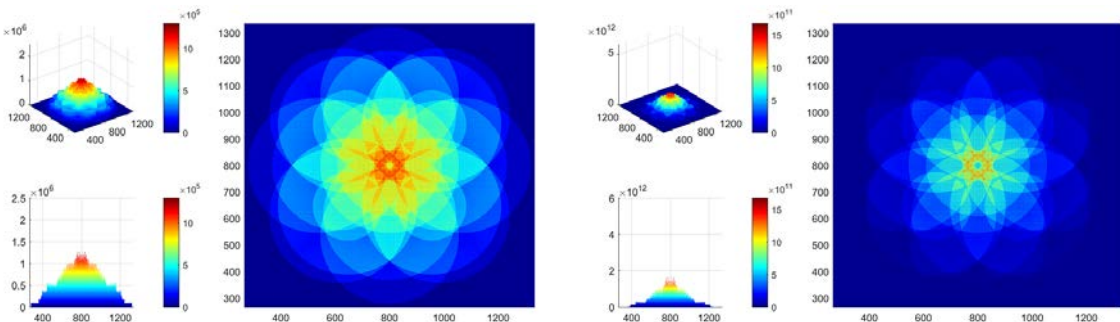


Fig. 8. Strength (on the left) and intensity (on the right) at level 80 (2.24 mm)

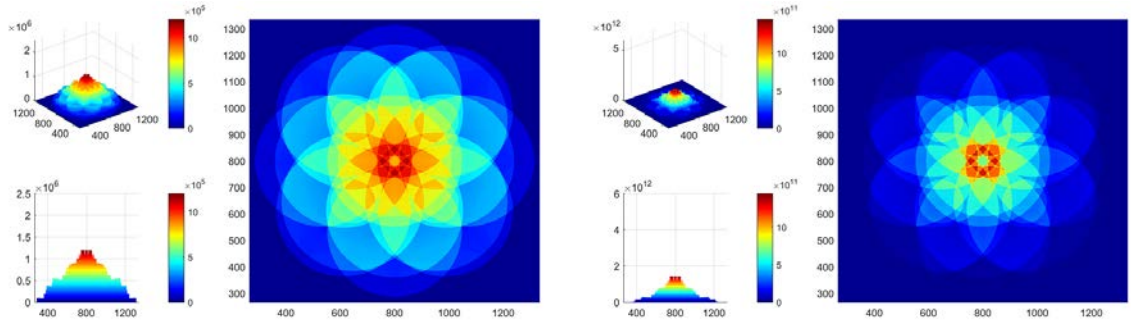


Fig. 9. Strength (on the left) and intensity (on the right) at level 100 (2.8 mm)

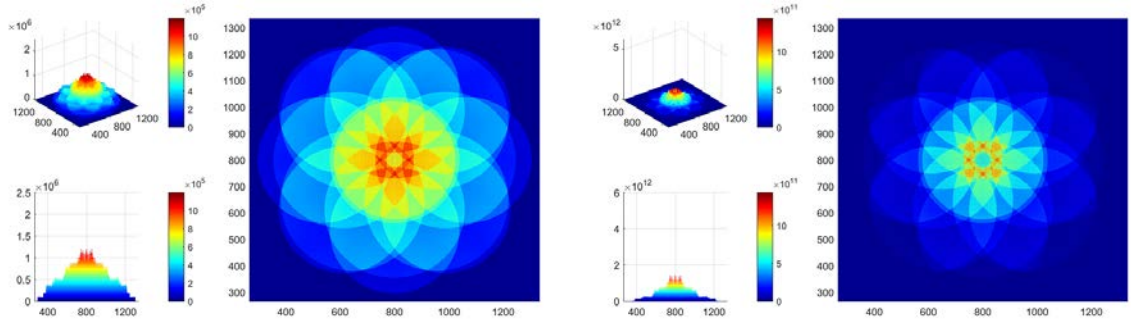


Fig. 10. Strength (on the left) and intensity (on the right) at level 120 (3.36 mm)

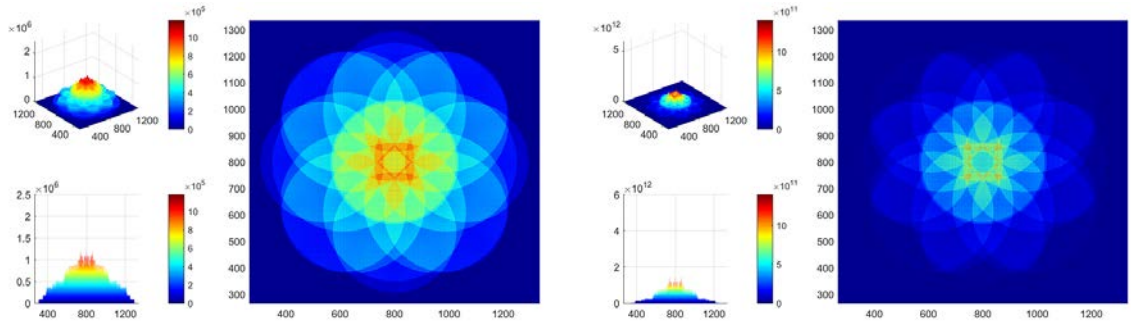


Fig. 11. Strength (on the left) and intensity (on the right) at level 140 (3.92 mm)

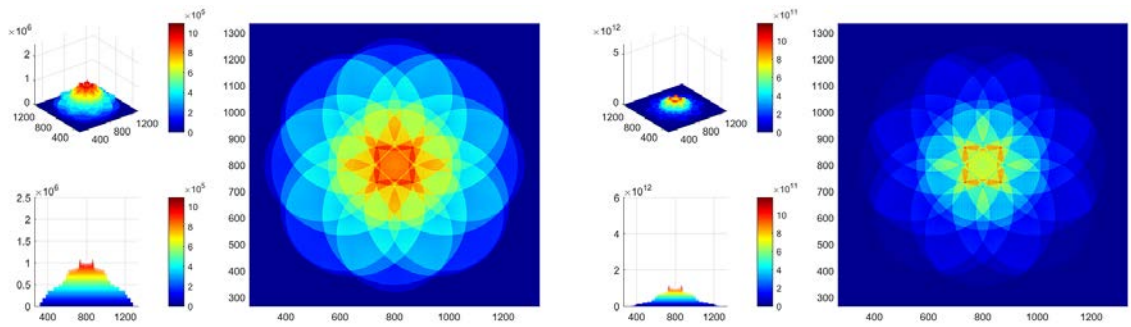


Fig. 12. Strength (on the left) and intensity (on the right) at level 160 (4.48 mm)

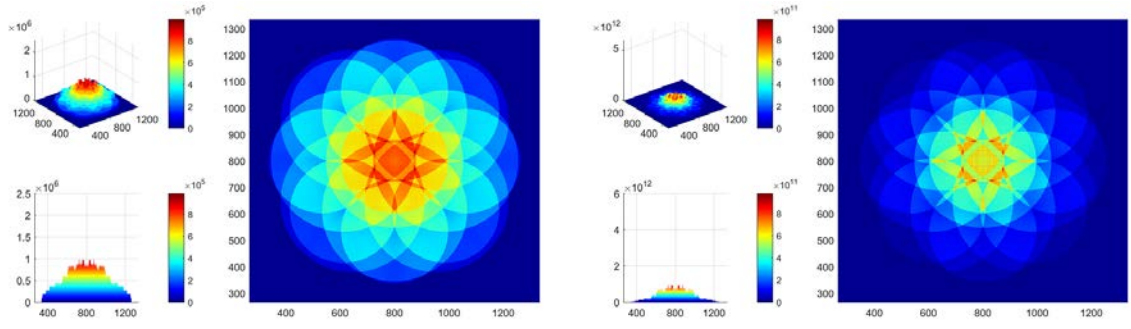


Fig. 13. Strength (on the left) and intensity (on the right) at level 180 (5.04 mm)

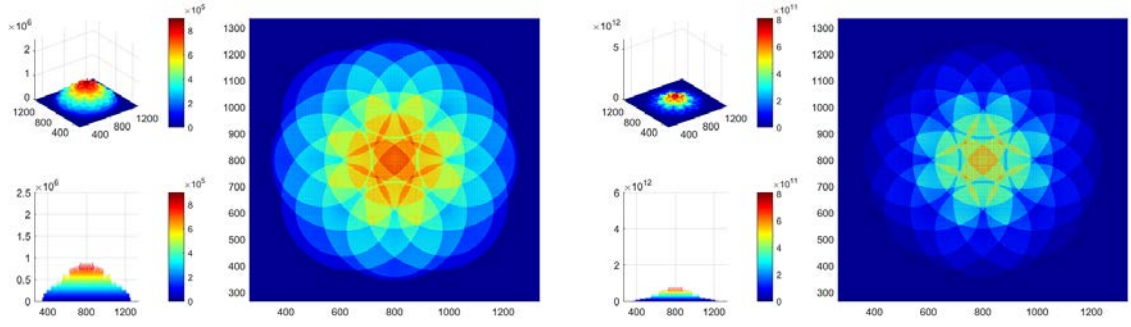


Fig. 14. Strength (on the left) and intensity (on the right) at level 200 (5.6 mm)

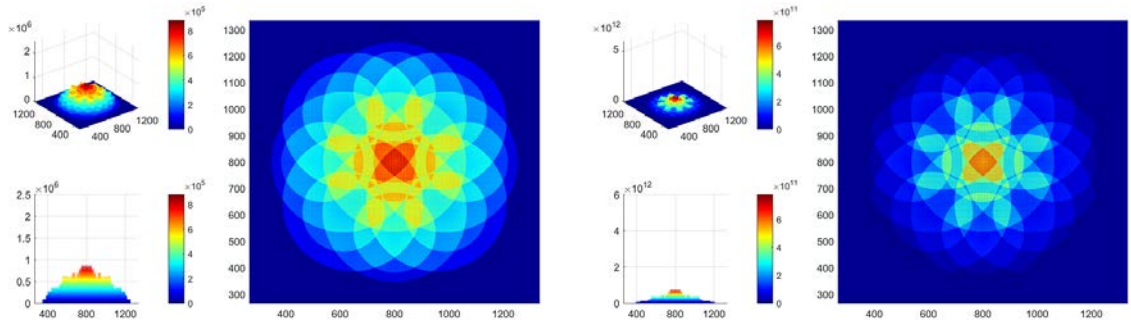


Fig. 15. Strength (on the left) and intensity (on the right) at level 220 (6.16 mm)

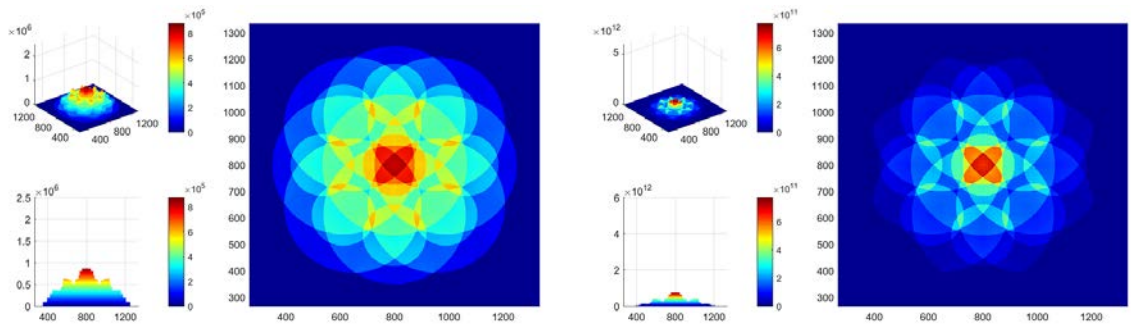


Fig. 16. Strength (on the left) and intensity (on the right) at level 240 (6.72 mm)

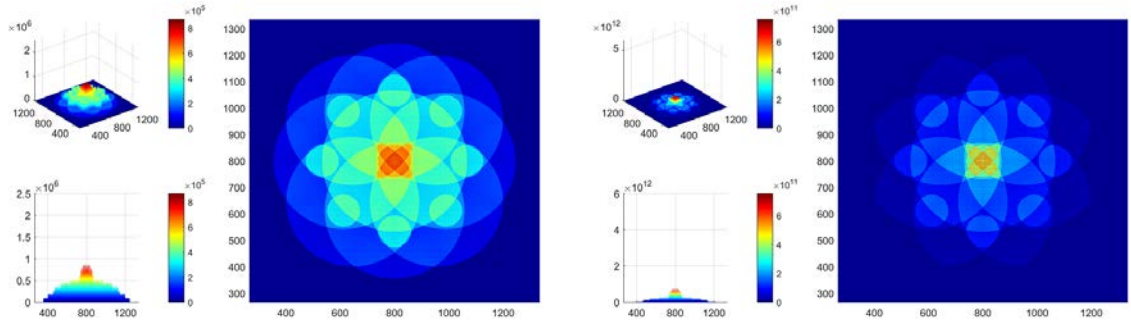


Fig. 17. Strength (on the left) and intensity (on the right) at level 260 (7.28 mm)

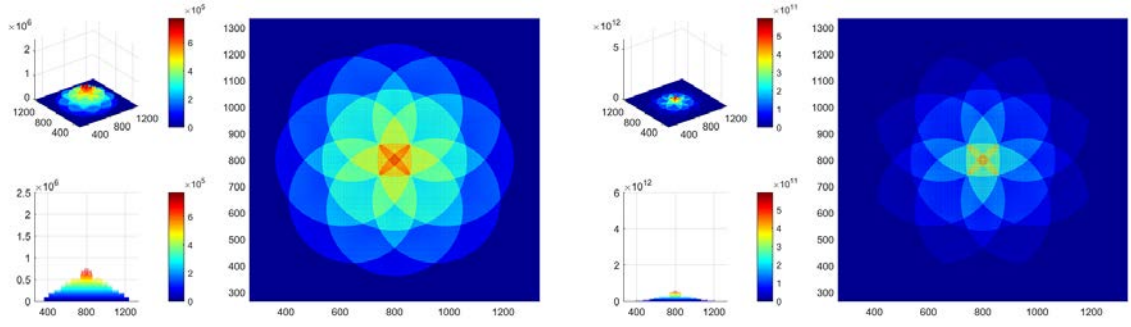


Fig. 18. Strength (on the left) and intensity (on the right) at level 280 (7.84 mm)

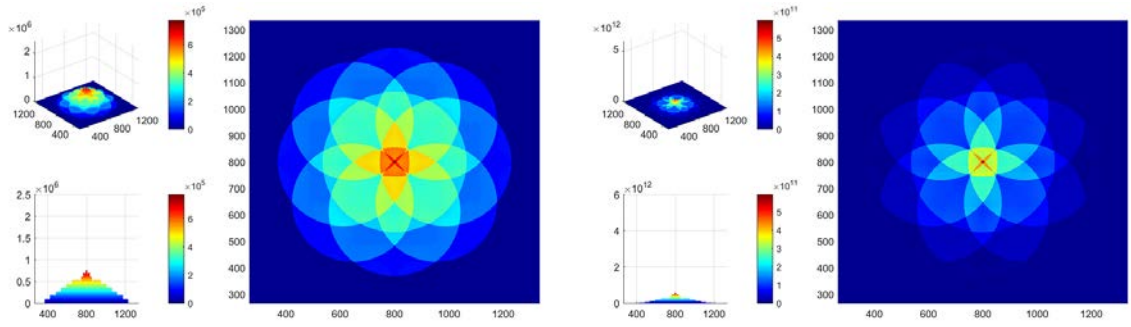


Fig. 19. Strength (on the left) and intensity (on the right) at level 300 (8.4 mm)

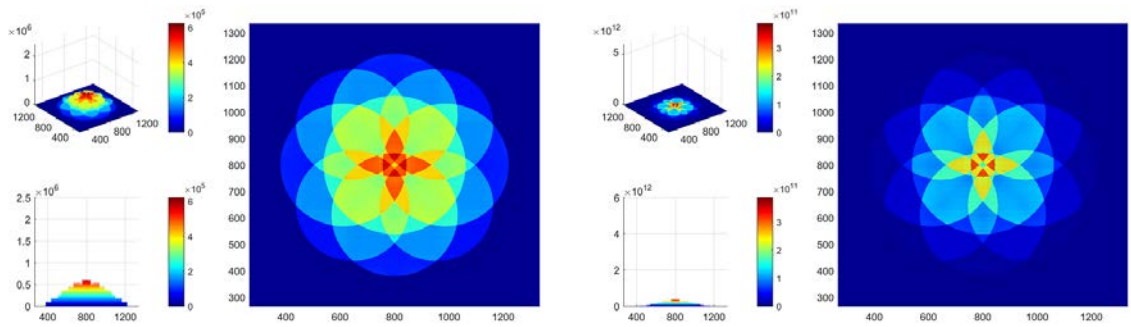


Fig. 20. Strength (on the left) and intensity (on the right) at level 320 (8.96 mm)

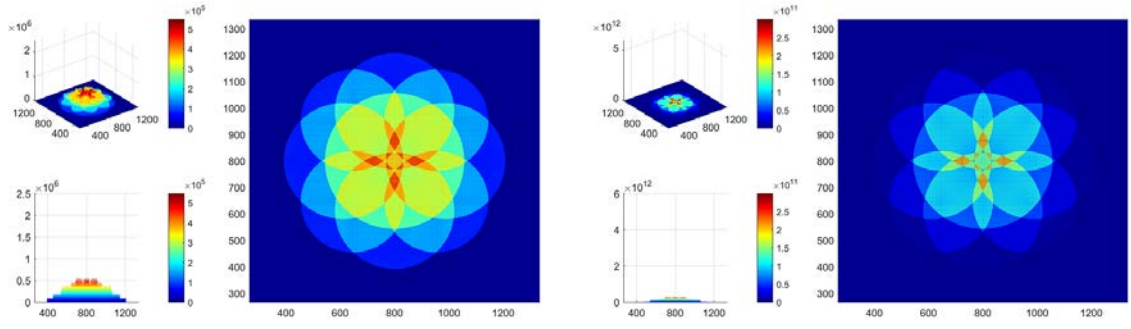


Fig. 21. Strength (on the left) and intensity (on the right) at level 340 (9.52 mm)

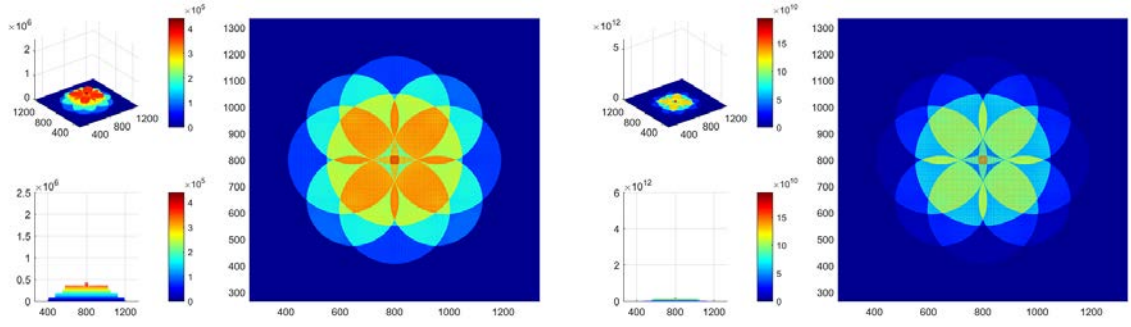


Fig. 22. Strength (on the left) and intensity (on the right) at level 360 (10.08 mm)

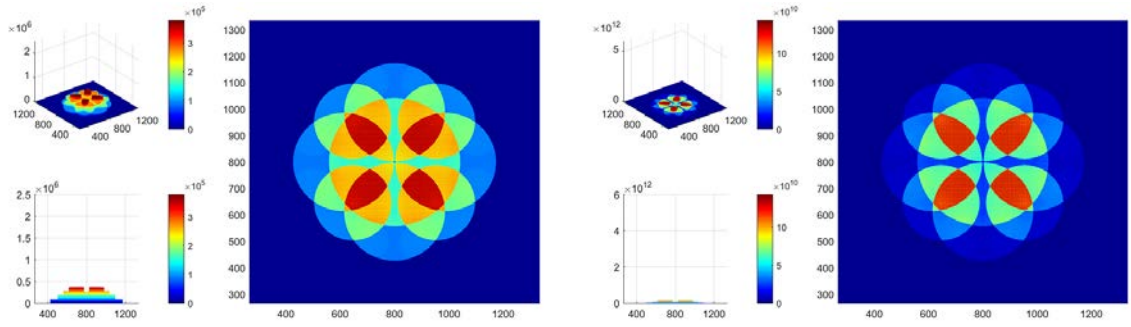


Fig. 23. Strength (on the left) and intensity (on the right) at level 380 (10.64 mm)

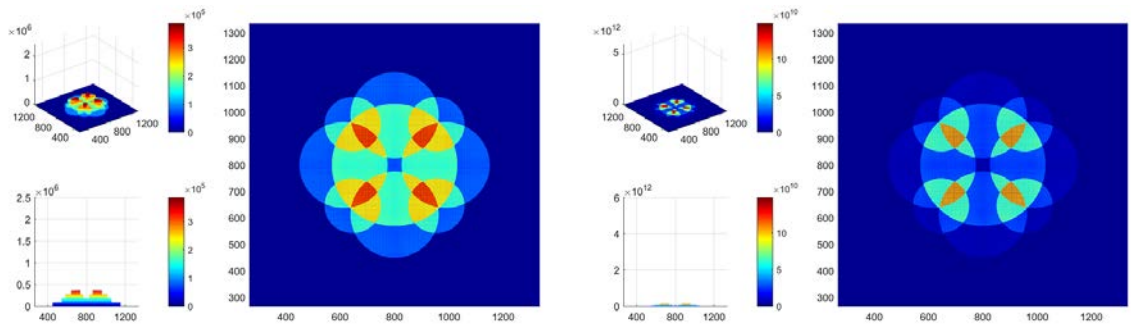


Fig. 24. Strength (on the left) and intensity (on the right) at level 400 (11.2 mm)

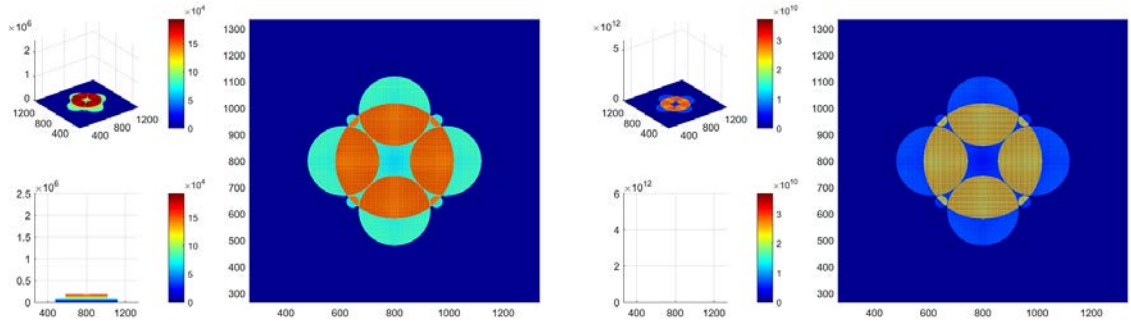


Fig. 25. Strength (on the left) and intensity (on the right) at level 420 (11.76 mm)

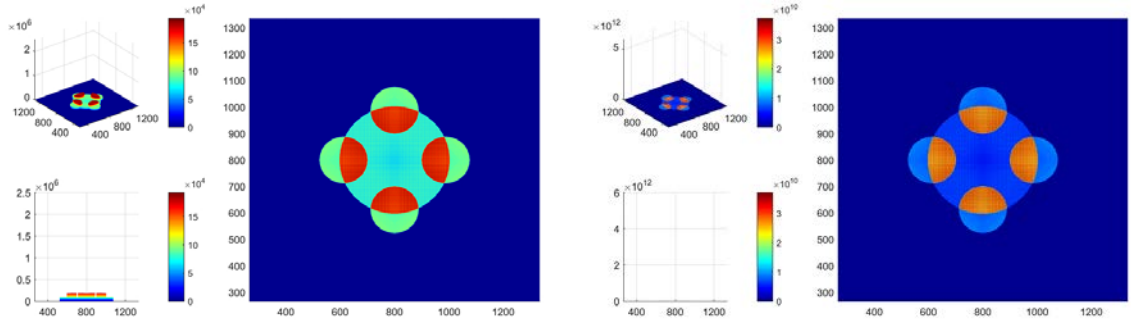


Fig. 26. Strength (on the left) and intensity (on the right) at level 440 (12.32 mm)

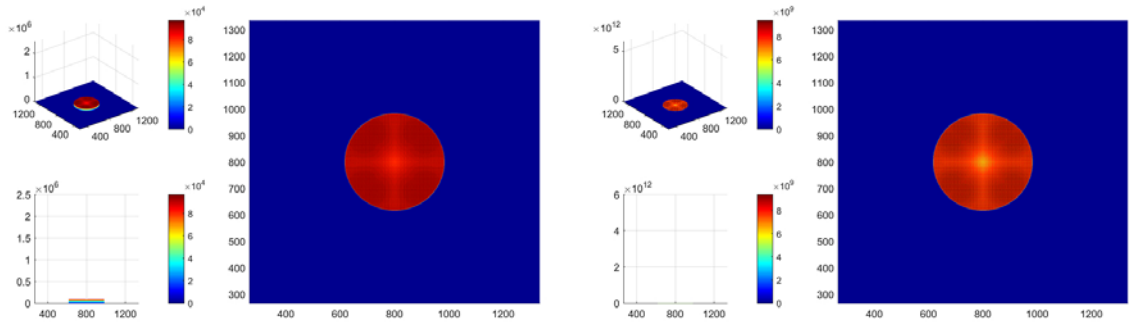


Fig. 27. Strength (on the left) and intensity (on the right) at level 460 (12.88 mm)

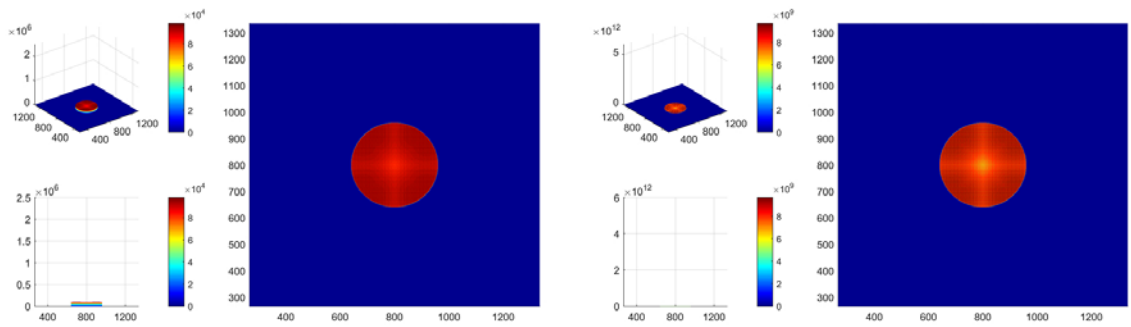


Fig. 28. Strength (on the left) and intensity (on the right) at level 480 (13.44 mm)

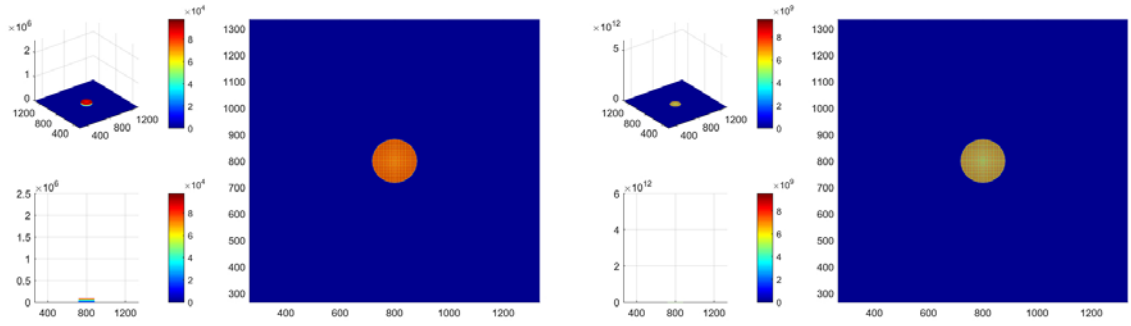


Fig. 29. Strength (on the left) and intensity (on the right) at level 520 (14.56 mm)

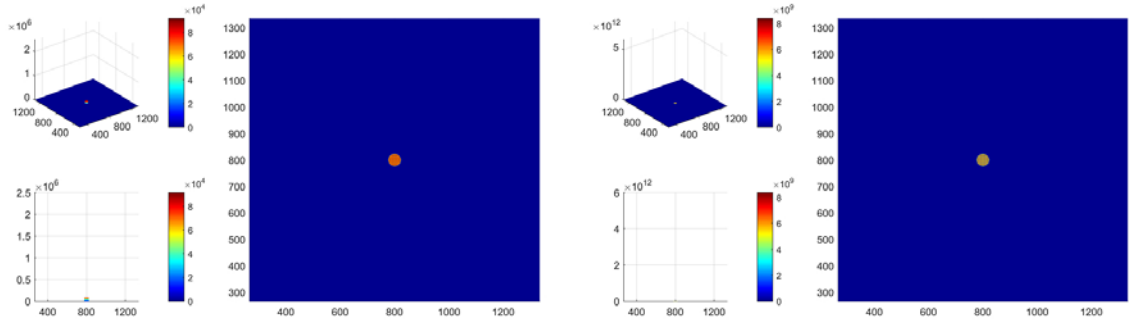


Fig. 30. Strength (on the left) and intensity (on the right) at level 532 (14.896 mm)

The animation (Appendix 3) shows the consecutive responses of the Aires resonator (microprocessor) to the influence of electromagnetic radiation in different sections from the edge of the resonator to its center in the form of a distribution of the strength and energy flux density of the electromagnetic field.

As can be seen from Fig. 3, 4, when approaching the center of the circuit, the strength E increases, reaching its maximum values in the immediate vicinity of the center, as well as the energy flux density I . And in the very center, as a result of the counteraction of potentials of the ring of strength, when their values are multiplied, there is a sharp change in the characteristics of the electromagnetic field: the strength tends to a maximum, and the amplitude approaches zero. Thus, the circuit's central zone is analogous to the point of singularity in quantum physics, i.e. the energy density there is as high as possible, and the amplitude tends to zero, which corresponds to the previously presented the matching principle expressed, which also implies the formation of a resonant field analogous to the intrinsic topology of the resonator.

The consequence of this response is the redistribution of the field's energy flux density I with its nonlinear growth from the edges to the center of the resonator with a difference of ~ 280 times: from $2 \cdot 10^{10}$ (norm. un.) to $5.63 \cdot 10^{12}$ (norm. un.), which, taking into account the coefficient of normalization K_{norm}^2 corresponds to the value $I = 0.039 \text{ (BT/M}^2) \div 11 \text{ (BT/M}^2)$ (fig. 4).

Since the energy flux density of the field is proportional to the fourth power of the frequency: $I \sim \omega^4$, then the response frequency will also change: $\Delta\omega \sim \sqrt[4]{\Delta I} = \sqrt[4]{280} = 4.09$, i.e. in 4.09 times will increase with respect to the original 2.4 GHz parameter and will be 9.8 GHz.

Thus, the directional harmonization of the wave processes with respect to amplitudes, phases, frequency, and the interaction diagram of the resonator's annular fractal topology initiates a stationary, maximally coherent point structure of high density with a minimum electric field intensity, which indicates the high neutrality of this zone.

In this case, the redistribution is not smooth and monotonic, but occurs in accordance with the profile features of the resonator's topological structure. Due to these features, the shape of the emerging field (electromagnetic superposition) over the resonator takes the form of a complex spatial hologram consisting of a large number of regular interpenetrating spherical surfaces of sizes that are multiples of one another and determined by the fractal structure and the dimensions of the annular grooves on the surface of the resonator.

CONCLUSION

The simulations showed that given electromagnetic action at a frequency of 2.4 GHz on an AIRES resonator (microprocessor), the device converts incident electromagnetic radiation into a coherent self-affine form (hologram). In particular, over the central part of the resonator, the incident radiation frequency of 2.4 GHz increases by ~ 4.09 times, i.e. corresponds to a frequency of 9.8 GHz, due to counter interactions between responses from different areas of the resonator surface.

Because electric field strength is directly proportional to the square of the frequency ($E \sim \omega^2$), the frequency of the incident electromagnetic radiation of 2.4 GHz corresponds to $E \sim 5.76$ (V/m). As a consequence, as a result of the resonator's transformation of the incident electromagnetic radiation with the formation of an electromagnetic superposition in the form of a resonant field response, the intensity in the center of the circuit will be $E' \sim (9.8 \text{ GHz})^2 \sim 96.04$ (V/m). As a result, the strength at the center of the circuit increases by a factor of ~ 16.7 , and the field's energy increases 280 times.

Thus, the energy of radiation coming from a Wi-Fi source (router) and modern mobile communication equipment (smartphone, telephone, etc.), after interaction with the resonator, is redistributed in space and across frequencies, transforming into a self-affine structure (hologram) with a potential 280 times greater than the source, corresponding to the self-affine topological lattice of a resonator carrying analogous properties (coherent transformation).

The field (electromagnetic superposition) (Fig. 31) that results from the AIRES resonator's (microprocessor's) interaction with incident radiation (2.4 GHz) is self-affine, possesses traits of holograms [4], and, according to the Gabor-Denisyuk theory of holograms, which states that any hologram bears all the same traits as the agent initiating the hologram, becomes a coherent transformer of any waves that interact with it.

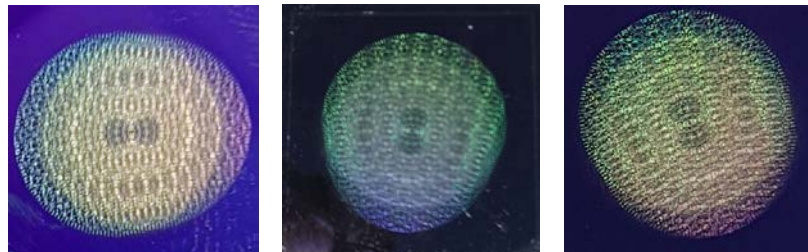


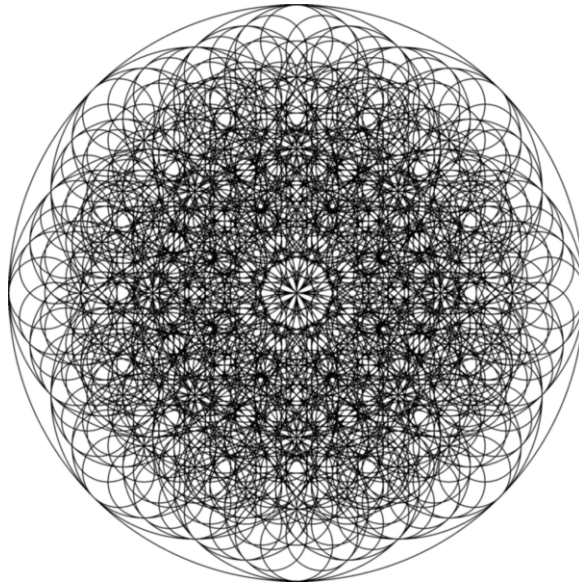
Fig. 65. Natural photograph of a hologram on the AIRES K8 microprocessor.

The results of the simulation demonstrate the redistribution of the characteristics of the electromagnetic field (strength and energy flux density), which reach their maximum values in the central part of the circuit, with a sharp condensation of the matched potential at its central point, which makes it possible to speak of the resulting stationary, spatial-wave electromagnetic reflex's ability to direct transform into a highly coherent form the electromagnetic radiation that interacts with it if that potential does not exceed the potential of the emerging reflex.

Based on the foregoing, we can state that the AIRES C16S microprocessor used in the Aires Shield Pro (2018 model) is a space-time amplitude-frequency converter (Fourier filter) that converts a dynamic wave pattern (2.4 GHz) into a stationary electromagnetic field that harmonizes external incident radiation in terms of amplitudes, frequencies, phases and the interaction diagrams and, thus, is a catalyst for coherent transformation of electromagnetic radiation interacting with it in the corresponding range of amplitudes and frequencies.

Consequently, in the presence of this resonator (AIRES microprocessor), the effect of harmonizing the external man-made radiation (2.4 GHz) with a biological organism's inherent radiation will be clearly expressed, which is confirmed by numerous tests with living objects, including the human body.

TOPOLOGY OF THE AIRES K8 RESONATOR (MICROPROCESSOR)



HARDWARE AND SOFTWARE

Hardware:

- Server: Supermicro CSE-733TQ-665B
- Processor: Intel Xeon E5-2620 v2 2.1 GHz (6-core) x 2.
- RAM: Kingston DDR3-1600 MHz, 96 GB
- Video card: ASUS GeForce GT 740

Software:

- PascalABC.NET v.3.3
- MATHLAB R2015b

ANIMATION

The dynamics of the computer simulation process can be viewed here:
<https://yadi.sk/i/DLILxUD63Y4w8L>