# BIOHOLOTOMOGRAPHY
# vs. Kirlian Photography and GDV

**Marina Shaduri, Ph.D.**

## Introduction to the subject

The story of electro-photography begins in 1777, when German physicist Georg Christoph Lichtenberg discovered unusual electric discharges in nonconductive materials. Strong electric fields created electrically conductive channels within insulator. These branching channels are known as Lichtenberg figures (fig. 1). An example of this effect is lightning, where intense electric fields produce a conducting path in the air. Complex interactions between ionized gas (corona or small propagating electrical sparks, called streamers) and the dielectric surfaces in Lichtenberg figures are explained by the breakdown of dielectric material.

*Figure 1. 3D Lichtenberg "Lightning trees" in a block of clear acrylic.*

Although studies suggest that Lichtenberg figures might be a combination of luminescence and Cherenkov radiation*, the reason of this effect is not fully understood. However, this discovery became the forerunner of modern day plasma physics and Xerography.

Back in 1939 Russian researcher Semyon Kirlian accidentally discovered that if an object on a photographic plate is connected to a source of high voltage, small corona discharges create an image on the photographic plate.

Kirlian studied electro-photographs of both - inanimate and biological objects (plants, human fingertips etc.). Computerized version of Kirlian photography, known as Gas-Discharge Visualization (GDV) technique, has been developed by Prof Korotkov in 90-th. GDV instruments use glass electrodes to create a pulsed electrical field excitation that induces ionization of air around exposed objects. The resulting glow of objects is transferred via fiber-optics directly to a computer in the form of bmp-files.

Despite claims of GDV-users that computerized electro-photography is an extremely powerful and comprehensive medical diagnostics tool showing the correlation between the GDV and conventional diagnostic techniques up to 98%, this technology has not been adopted by official science. Main objections are poor repeatability and improper interpretation of induced

emanations. Recordings are not reproducible being dependent on numerous environmental factors, as well as on structural and functional properties of exposed objects.

Entire field of bio-electro-photography is nowadays regarded as useless for scientific purposes, especially after some laymen started to interpret induced radiation of biological objects as the manifestation of mystic auras or "live fields" of non-physical nature.

Interpretation of experimental and clinical data offered by developers and users of GDV-devices is highly contradictory. Thus, according to Prof. Korotkov, "information encoded in the electrophotonic Kirlian glow comes directly from our consciousness rather than from the physical body", since the fear of a disease and the real disease, itself, produce similar changes on fingertip coronas [ http://kirlianresearch.com/kirlian_research.html ]. The author admits that stress and other negative factors seem to disrupt the uniformity, coherence and the magnitude of the human electro-photonic glow measured with the GDV instrument. The sensitivity of fingertip emanations towards psychological state of a person and also towards some other "negative factors" (?) contradicts the author's claim that high correlation exists between the GDV and conventional diagnostics.

Our team tried to separate scientific truth from groundless believes and fraud. Below we present some results of our earlier studies, which clarify main flaws concerning existing technology of GDV. We will also discuss a modified version of electro-photography (Bioholotomography) that enabled us to get qualitatively new information on biological objects.

**GDV technology – analysis of some results**

In GDV systems very short (microsecond) pulses of electric field affect small parts of the human body (typically each fingertip at a time). Objects are pressed directly to polarized glass being exposed to electromagnetic field for 0.5 sec.

Results of our experimental and clinical work demonstrated that:
1) one and the same fingertip captured twice within several seconds produces non-comparable imagery in a majority of cases (fig 2).

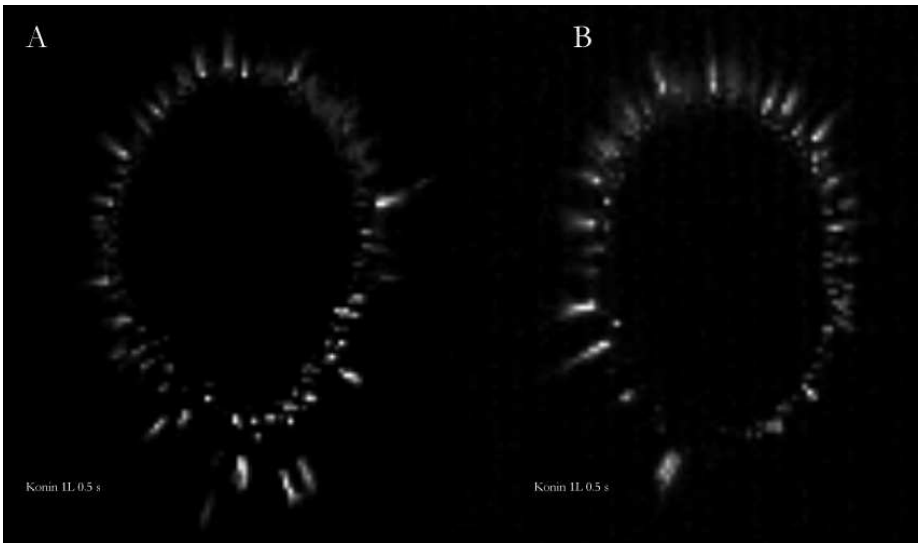



*Fig. 2. Distribution of bright jets (streamers) around contact area is not repeatable: In presented case the time-span between two records of a person's thumb is less than 5 sec.*

2) the emission of a fingertip depends upon duration of the exposure:

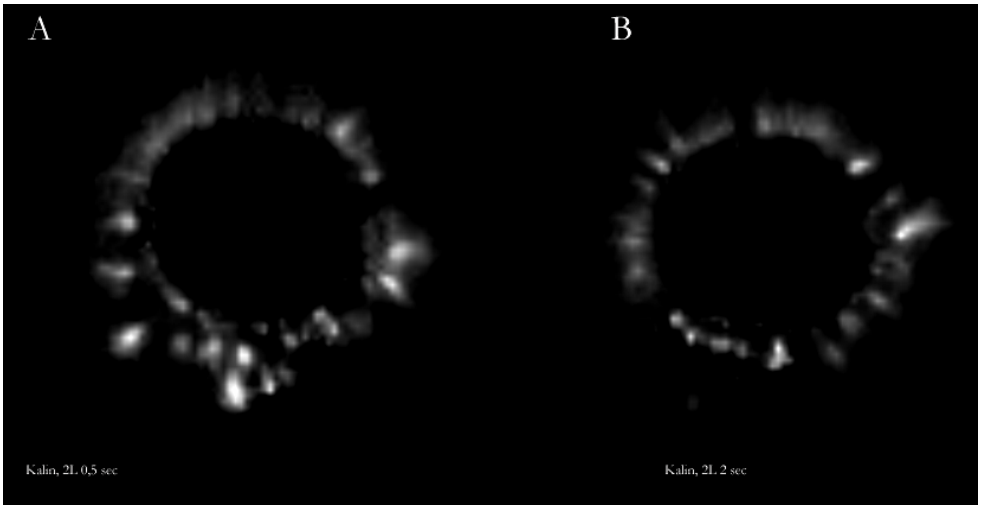



*Figure 3. One and the same fingertip exposed to electromagnetic field (1000 Hz) for 0.5 sec (A) and 2.0 sec (B). Coronas differ greatly from one another.*

3) the emission of fingers depends upon the age of a person. Thus, coronas of healthy children are usually very disordered and almost "empty", as shown on figure 4.

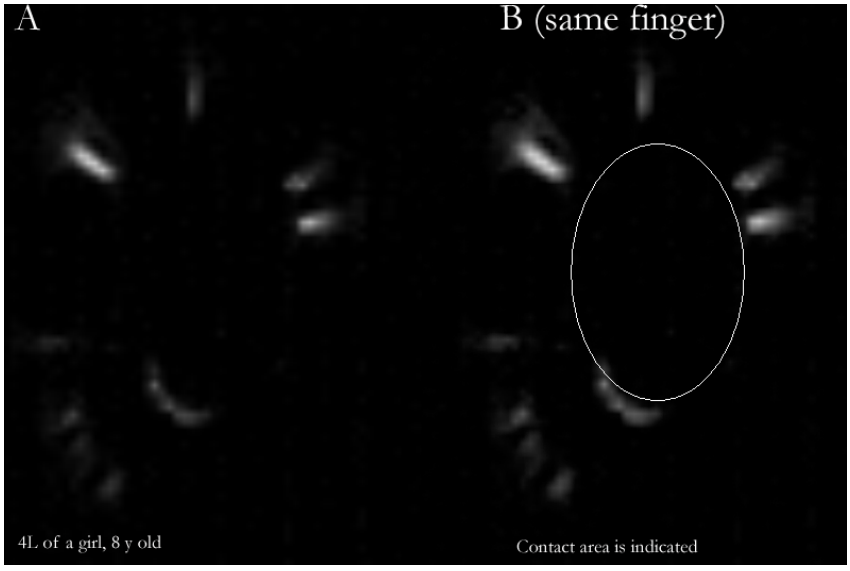



*Fig. 4. Emission of a 8 y-old girl (ring finger). The streamers are shifted from the contact surface down to the periphery of the glass electrode.*

Main conclusions that one can infer from results obtained with this "diagnostic tool" are:

1) GDV-device cannot provide repeatable imagery if used as recommended by its developers;
2) Emission of fingertips depends on many external and internal factors;
3) Some jets (from fingertips) induced by EMF are too intensive to be captured;
4) Non-reliable imagery acquired with existing technology cannot be used as a diagnostic procedure.

## BIOHOLOTOMOGRAPHY (BHT)

Living systems are extremely dynamic and complex, besides, they emit very weakly. In order to find any correlation between the state of a biological object and its emission, it is necessary:

a) to enhance the emanations of an object. The enhancement of living systems' emission takes place during electro-photography of bodily parts;
b) to separate its stable components from variable ones;
c) to study the matrix of correlations between scattered waves and particular states of a system.

***Short explanation:***
*From physics course it is known that incident electromagnetic waves of particular frequencies accelerate corresponding particles. Accelerated particles emit electromagnetic radiation in all directions. This emitted radiation presents the scattered waves. More exactly, energy is absorbed from the incident waves by exposed objects and re-emitted as electromagnetic radiation resulting in some shifts of energy. The shift in energy gives information about the state of the system under observation.*

*If the voltage of electromagnetic field is high enough to induce the ionization of surrounding air, weak emanations from exposed objects would interfere with processes of ionization (dielectric breakdown of the air) forming a corona of bright streamers around objects/fingers. Since accelerated charges emit electromagnetic radiation in all directions, only a part of streamers would lay in the plane of insulator. Besides, the most intense jets might run down to the periphery too fast leaving only dark traces instead of bright streamers.*

In GDV-devices human fingertips are pressed to the surface of glass electrode. Therefore, an important part of fingertips' emission is lost. In order to "trap" streamers in vicinity of the fingertip, we used an additional insulator placing it loosely on the glass. **Elastic transparent membrane between fingertips and polished surface of the glass preserves main components of emission in proximity of contact surface and enables emitted charges to collide and recombine**. As a result, the corona comprises much more components of emission spectrum (here - gradients of gray colors) displaying complex structures instead of "half-empty contours" (fig. 5).

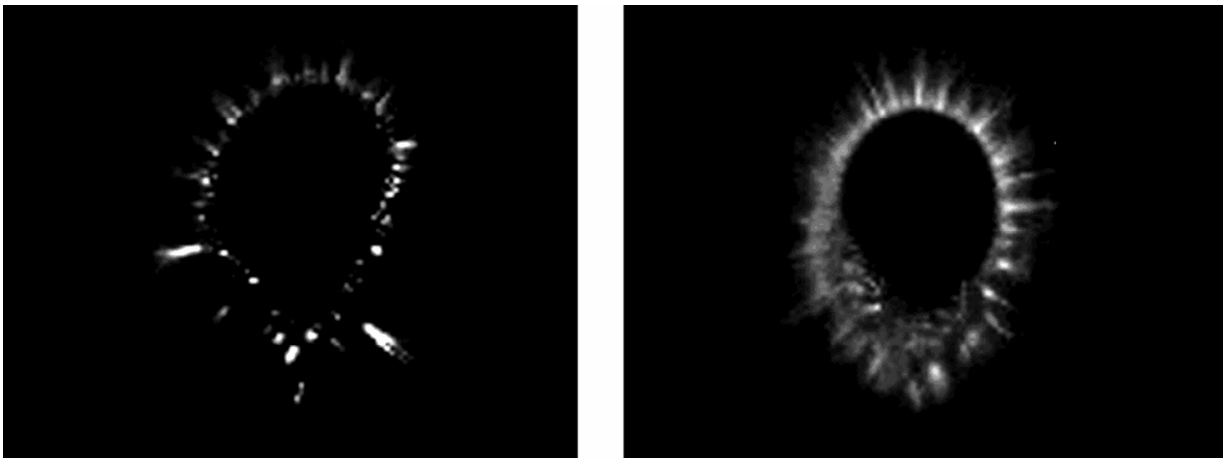


*Figure 5. Emission of a fingertip recorded without (left) and with (right) elastic insulator placed between the glass and finger.*

It should be noted that only loosely placed elastic membranes make it possible to get relatively stable results while capturing emission of exposed objects – none of rigid or firmly attached dielectric layers could yield good results, since an uncontrollable factor, namely increasing pressure of ionizing gas (between two layers of insulators) starts to play major role in these processes.

Another negative factor is the spurious light reflected from the surface of exposed finger and from the upper cap that protects objects from outer light. In order to reduce this noise we added an opaque membrane with uneven texture upon the transparent one. Two elastic membranes - a transparent and an opaque ones (selected empirically) - helped us to improve the quality and reproducibility of fingertip coronas.

Gas discharge processes are widely used in practice to generate light by sending an electrical discharge through an ionized gas (e.g., fluorescent lamps) and it is known that the character of the gas discharge critically depends on the frequency or modulation of the current. Obviously, electromagnetic field of high frequency produces coronas of fingertips that differ from those acquired with lower frequencies. This happens not only because emission is more intensive (bright) in response to higher frequencies, but also because waves of high and low frequencies resonate with various particles of exposed objects.

In order to study various components of stimulated emission, we modified entire procedure of the examination: in new mode of recording **each fingertip is exposed to electromagnetic field of increasing frequencies so that their position remains unchanged**. This improvement enabled us to compare emission of one and the same finger in response to different stimuli. We realized that some parts of coronas turned out to be more variable than others, so it became possible to distinguish stable and less stable components of emission using analytical software (fig. 6).

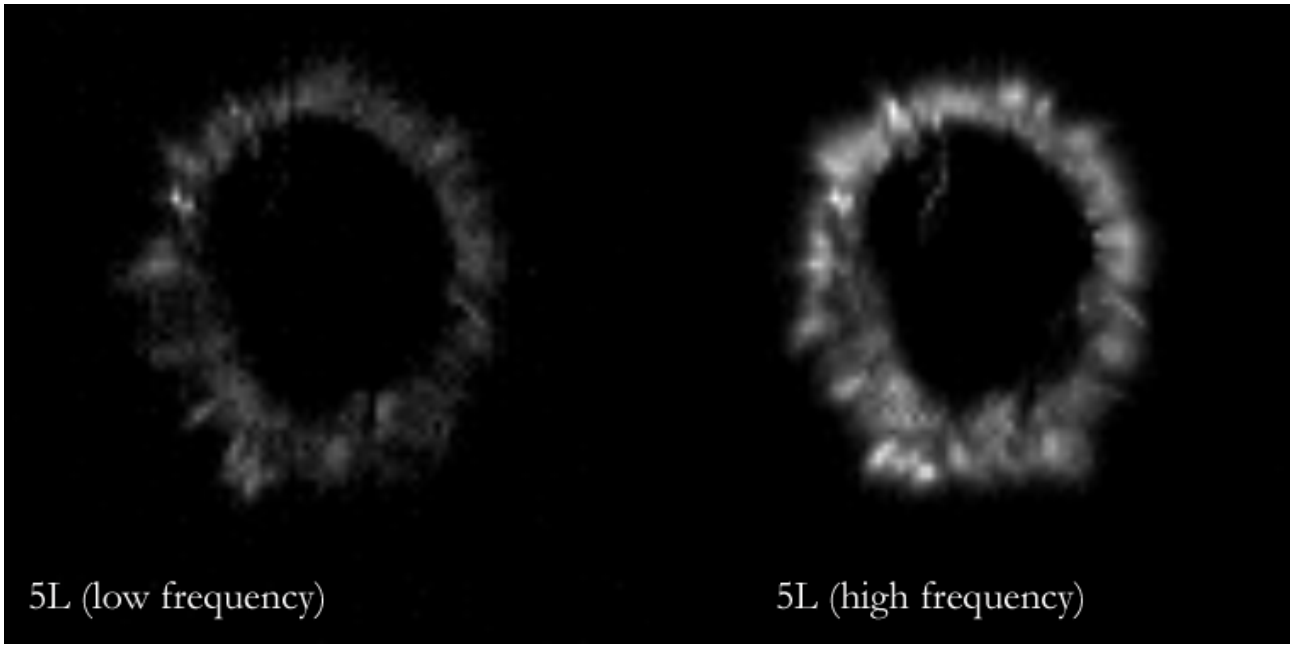


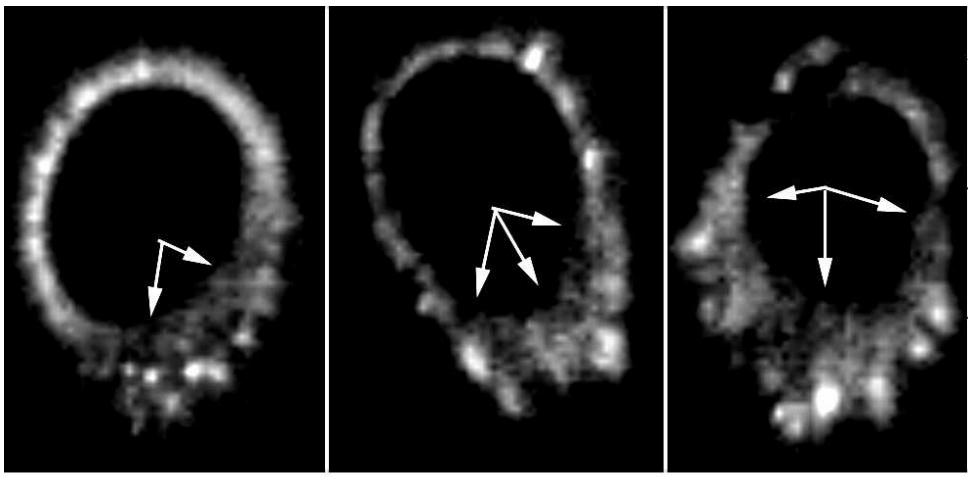

*Figure 6. Emission of a finger in response to EMF of low and high frequencies (captures are made within 1,5 sec).*

The most important step in further activity implied the search of correlation between characteristics of emission and particular states of a system. **We had to understand whether some diseases or malfunctioning parts of a body have typical signatures on coronas of 10 fingertips**.

Interpretation of coronas offered by producers of GDV-technique implies their mapping. According to Prof. Korotkov, the glow in certain sectors around human fingers correlates with performance of particular organs and systems of the human body. He offers a chart that displays this correlation in the form of pseudo-colored aura around the model of human body. However, when we analyzed data of 3 thousand patients, this chart coincided with real problematic areas only in 10-15%.

We studied coronas of several thousand patients trying to improve charts offered by several independent researchers, but could not get satisfactory results. Our team of medical professionals was able to differentiate acute state from a chronic pathology, energetically exhausted person from non-exhausted one, we also found some signs typical for aggressive and invasive pathology, such as cancer, but we failed to determine any correlation between particular organs/systems and corresponding areas on fingertips.

It became evident that fingertip coronas cannot be mapped, so we were ready to give up joining those skeptics, who consider Kirlian effect as useless for diagnostic purposes. However, by those times our database comprised data of several thousand patients with various pathological states and we found some signatures typical for particular pathological processes. Thus, while working in cooperation with anti-tuberculosis center, it became clear that the texture of emission has characteristic "moth-eaten" appearance in case of tuberculosis (fig. 7). So, we decided to analyze all data once more.



3 cases of tuberculosis - pay attention to the "moth-eaten" texture of replicas (degrading tissues of lungs)

*Figure 7. Some signs of tuberculosis*

Thorough study of coronas' appearance, texture and defects turned out to be crucial for our study, since it enabled us to discover an astonishing fact: all fingertips contain information on specific shapes, densities and energy-content of dominant pathological area. These signatures of pathology are displayed on many coronas from various angles of view and on different scales. The replicas of misbalanced organs are very distorted and "crooked" on some coronas, but readily recognizable on others. Having coronas of all 10 fingertips, it became possible to "observe" one and the same problematic area from various viewing angles.

This non-trivial finding could not be announced without firm experimental proves and scientific explanation of previously unknown effect. Our theoretical and experimental work in cooperation with physicists resulted in a better understanding of new phenomenon and in finding experimental proves of its holographic nature.

Since modified procedure of electro-photography enables to record holograms of various "slices" of system-hierarchy and analyze dominant pathological areas from various points of view, we named it BIOHOLOTOMOGRAPHY, or BHT, for short (patented).

Thus, improperly interpreted experimental data and inability to find reasons of poor repeatability compromised entire approach to the study of living systems, which turned out to be the only option to get information on whole body and its actual problems simultaneously and non-invasively.

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* Cherenkov radiation is electromagnetic radiation emitted when a charged particle (such as an electron) passes through an insulator at a constant speed greater than the speed of light in that medium.