Tesla Kacher Static electricity part 1
https://www.youtube.com/watch?v=6P3lrTC1Kvw

In the section of the "anomalous glow discharge" of the I - V characteristic, we see an interesting phenomenon (the whole circuit becomes a negatively charged)

Transcript

00:00 greetings to all researchers
00:02 I got such a mode on Tesla-kacher
00:05 electrostatic discharges from the top end
00:08 its schematic is most common kacher
00:13 nothing supernatural, here it is,
00:16 all values are presented
00:24 transistor I use irf640 and
00:27 zener diodes must be added too
00:28 otherwise it will
00:29 knock out MOSFET’s gate
00:32 connected from the lower end here
00:37 at this point the blue trace in relation to
00:41 the common end and at this point
00:44 there is a yellow one on the drain here we are
00:47 we see what kind of signals are here
00:56 the zener diodes are “cut” from the top and bottom
01:00 then you get roughly under 18-20 volts
01:04 you need to power it exclusively with battery
01:09 otherwise this effect will not occur
01:12 there will be no “clicks“
01:15 the click speed depends on the capacity and
01:18 there are more other parameters
01:22 how fast it recharges
01:30 in principle, why not use power supply
01:35 it didn't work out here, I have a power supply unit with
01:36 transformer, so I drew a schematic
01:41 about how it looks there, well, here's another
01:43 there are regulators and the relay block
01:47 it turns out that it is sparking between
01:50 secondary and primary in this iron
01:53 transformer which is in this block
01:56 they are all wound there one
01:59 on a top other and even “clicks” are heard when
02:01 this breakdown occur
02:04 so there must be good decoupling
02:07 I have an oscilloscope with a common end
02:10 surprisingly well isolated from the ground
02:13 there is a switching power supply after all
02:15 the capacity is small between coils
02:19 so I'll even show you the whole schematic is
02:22 under the potential here, look here
02:24 I will bring the earth end to the terminal
02:26 battery what will happen
02:28 in general, it stops clicking

02:34 I don't know will be visible or not visible here
02:38 start to click from here
02:43 this statics is the same with a minus terminal
02:49 is here at a very small distance
02:57 it clicks from all points of the schematic
03:09 from the collector itself is already difficult to see
03:17 well, in short, it's small here from
03:21 the top end is just higher in voltage
03:23 it turns out it means everything goes to earth
03:27 and so that the effect is good
03:30 the end of this earth must be sharp
03:33 but here, as it were, as a sphere, everything is so
03:36 collected, of course, very “fast and dirty” style, but the effect is
03:39 appear quite well
03:41 no diodes and here I didn’t insert one
03:45 as other researchers have added
03:47 here, in principle, everything is working without diodes
03:52 everything become buggy, the monitor is cut down here
03:55 periodically
03:59 I'll show you another moment
04:04 let's take such a visualizer
04:09 electrostatic field and here it is
04:15 it is charging blue, and even during
04:18 click time and I don't know whether it is visible or not
04:20 the light is blinking, the LED is more precisely
04:26 I don’t know how much you can see this here it is
04:30 marked this just the moment of the click
04:32 when our circuit discharges the capacity as
04:37 if it closes, it goes out and
04:43 charged mostly always from blue then
04:47 there is a negative field around
04:50 that's such an interesting moment
04:53 now I mean I began to figure out when
04:55 but we get this effect
04:58 the trick is all in that hour if I again have it
05:01 I'll connect
05:03 the whole circuit by the way under high voltage must be
05:06 careful
05:13 the arc discharge begins closer
05:15 an arc is coming here already
05:19 the arc is transient here such a discharge
05:21 it's sizzling here so it starts
05:24 click in static if a little further from
05:28 ours, we get a glow discharge
05:29 we see such a thin thread stretches from
05:32 needle
05:32 and then we just have a crown that is
05:36 on the edge burns like the tip of needle
05:38 this is a corona discharge
05:40 then again here we have smoldering when here
05:43 this thread is pulled out then just a little
05:49 closer these begin

05:50 electrostatic clicks with this
05:55 distance we can set the speed
05:57 then it goes on unstable
06:00 such an arc discharge and further stable
06:03 arc
06:04 already pure plasma is burning which is all
06:06 heats up actually
06:10 how it happens
06:13 I drew there is such a volt-ampere
06:16 discharge characteristic of the spark gap
06:18 here you can see it in different
06:21 variations and that's what it turns out then
06:25 we first have a corona discharge here
06:29 here it is indicated in this figure we
06:32 we observe it then we have it
06:34 drop lights up
06:36 smolders he starts such a thread
06:38 there is a voltage drop this is us
06:42 saw on lamps in experiments here I
06:43 also showed with ultraviolet lamp
06:49 you light it in an arc, you
06:52 more precisely, not in an arc, exactly in a smoldering
06:54 the category it goes over already strata such
06:56 appear and here you can see something like
07:00 would be the disappearance of the glow on one of the
07:04 ends depending on where the cathode or anode
07:07 there is such a thing that is
07:10 such a discharge means here we are too
07:15 this thread is when we are just it
07:18 this glowing discharge starts here we are
07:21 we will see the thread only in the air, as if in
07:23 gas corona then does not appear.
07:26 that is, here it is, we have this site
07:29 normal glow discharge is indicated
07:31 and then an abnormal smoldering
07:34 discharge that is, this is an upward
07:36 section but the current-voltage characteristic
07:38 that is, here we see that behind it at
07:41 we start these
07:45 electrostatic effects and so well
07:51 we can set the speed further with us
07:53 there is a transitional mode when there is still
07:57 falls higher here with an abnormal
08:01 smoldering, the tension rises again
08:03 begins this charge of capacitors and
08:07 periodic probing
08:09 that is, such a separation in HF and statics
08:13 happens in this discharge
08:15 then this transitional moment and
08:18 an already stable arc is ignited, well, how
08:21 with welding machines it is exactly
08:23 heats up that is, if we watch and for

08:26 we are waiting here we will take a closer look here
08:32 the needle here also begins to color on
08:37 that is, it is already heating it
08:39 the plasma turns out so steadily here
08:43 we distinguish such a discharge phase and such
08:47 here's an interesting effect
08:48 well, once again let's take a look now
08:51 I'll substitute a closer look at all this for more
08:53 low speed here it is more rare
08:57 clicks good in sight, we'll see
09:03 our indicator how it reacts
09:07 zero
09:08 here we see at the moment of clicking a light bulb as
09:11 would go out but it gradually then just
09:14 charging
09:15 you can't see anything
09:28 here we see
09:31 that is, it turns out cleanly
09:33 electrostatic field if we are this business
09:36 let's take it far away now what we have here
09:40 it turns out but nothing indicator
09:45 almost no pluses and minuses
09:47 charge that is, here we see please
09:50 electrostatic field and here is a plus
09:53 now if I am now
09:55 I'll bring the land
10:00 did not see anything, but here we are, I'm getting closer here
10:11 these clicks are bringing our ground now
10:16 is still close, it will be very rare
10:18 click like this for at least 1 second to
10:22 was about
10:32 the camera is just uncomfortable to hold
10:35 adjust this gap
10:43 here you can click like this here
10:47 switch on the spark gap
11:01 this is the effect that's interesting
11:14 moving
11:23 as it approaches further in an arc already begins
11:30 to disrupt