

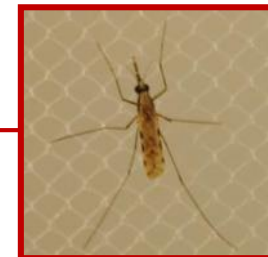
# Electronic Mosquito Barriers: a non-chemical insect repelling technology using electric fields

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# Partners & Funder



## Partners

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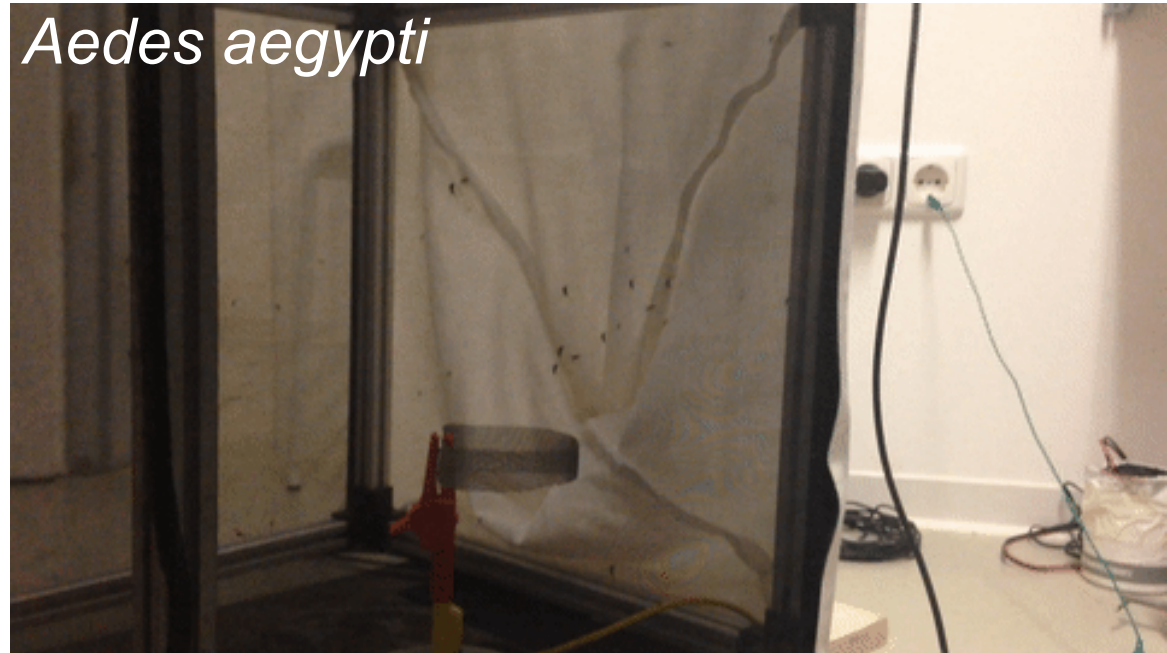
# Why insects sense electric fields (hypothesis)



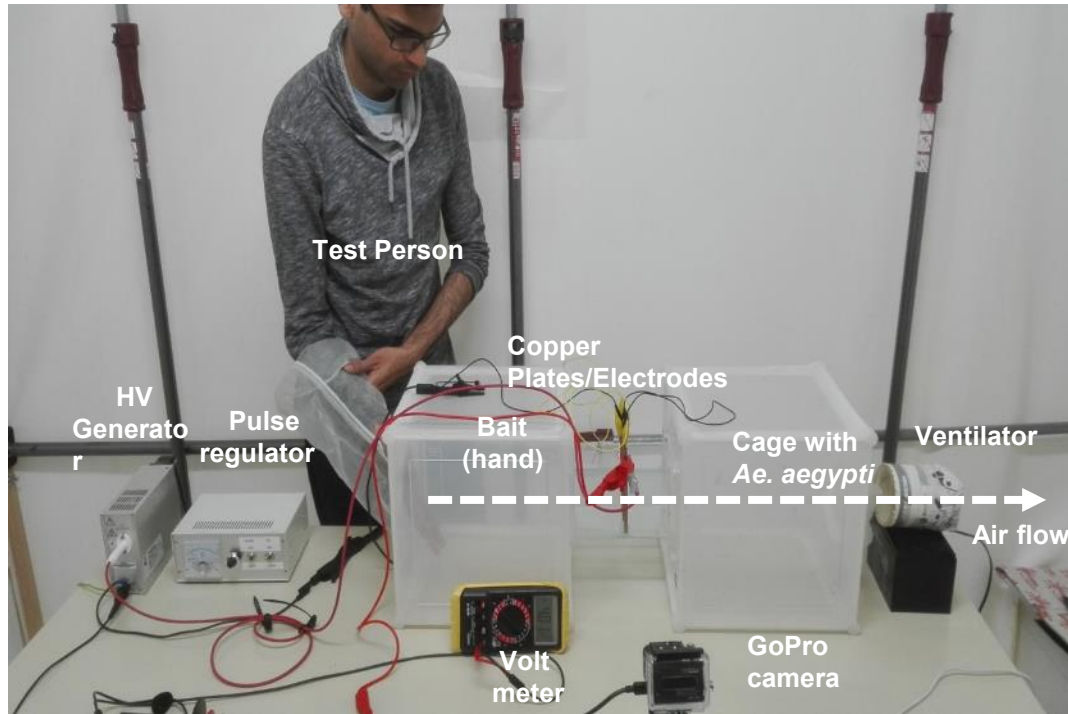
Cause hairs to bend, activating neurons at the base of the hair sockets, which allows the insects to “sense” the field



*Aedes aegypti*



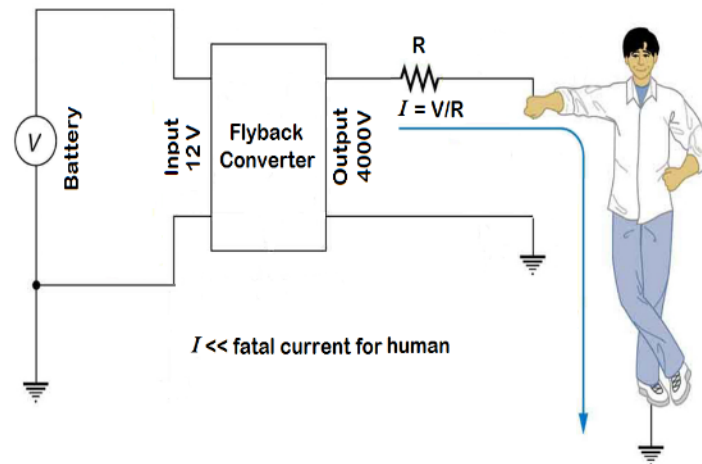
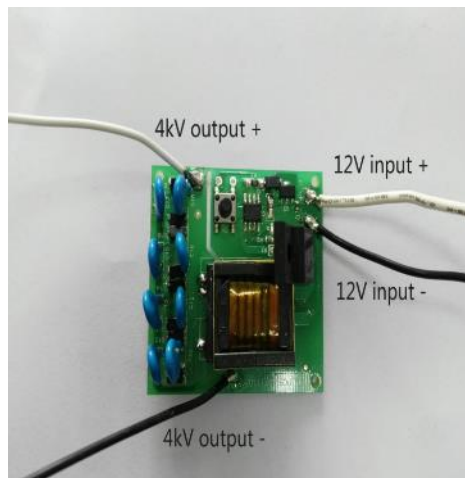
# Electric fields and mosquitoes (*Aedes aegypti*)



Hungry females

5min at test Voltage (a)  
5min at 0 Volt (b)

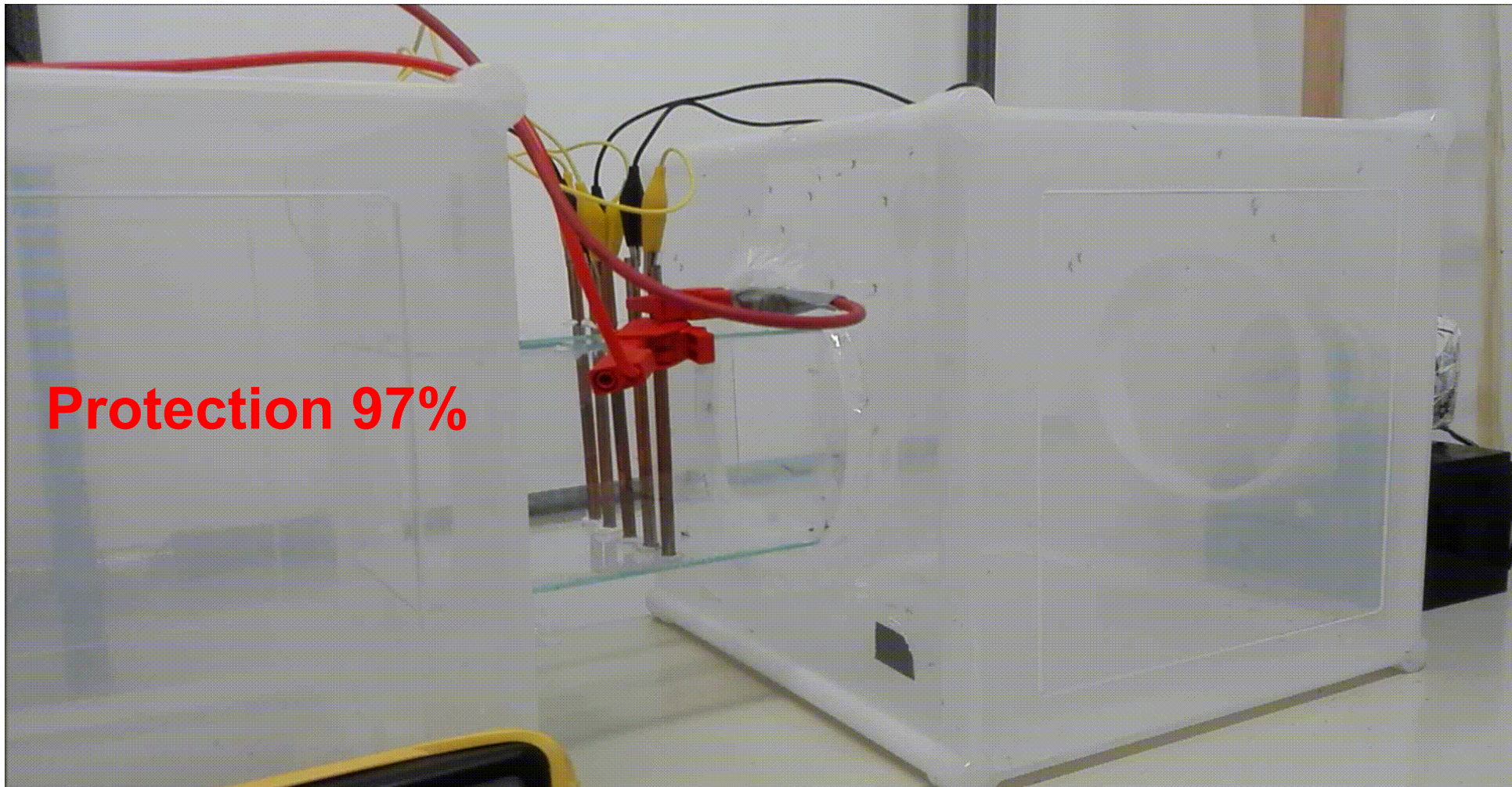
$$r = 1 - [a / (a + b)]$$



# Electronic mosquito barriers

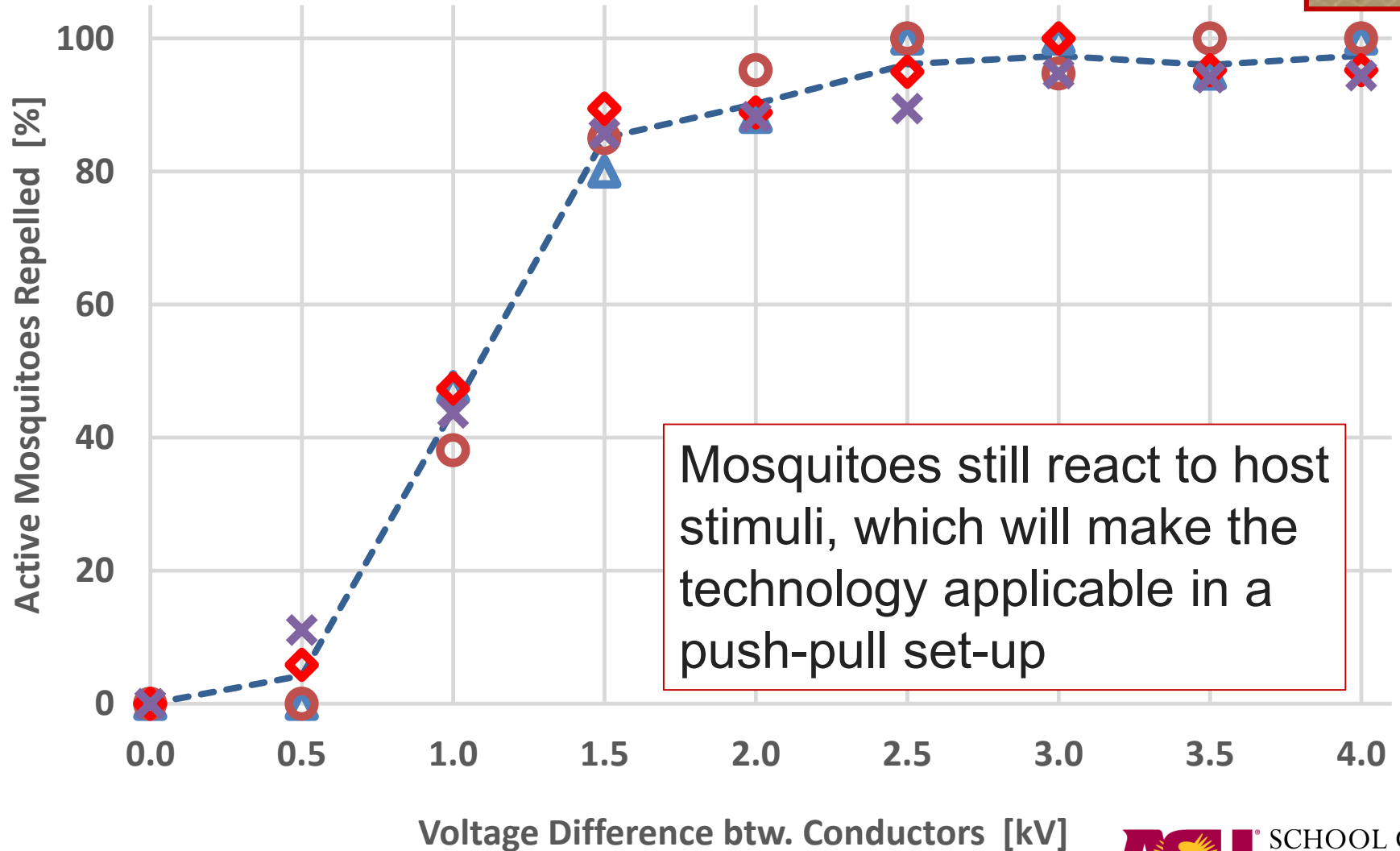


Setup: 4kV  $\oplus$  ;  $d=2\text{cm}$



Protection 97%

# Voltage-repellency relationship



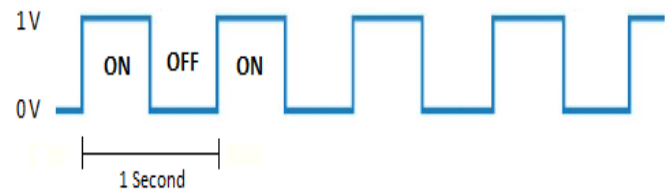
Mosquitoes still react to host stimuli, which will make the technology applicable in a push-pull set-up

# Adding high power pulsed electric fields

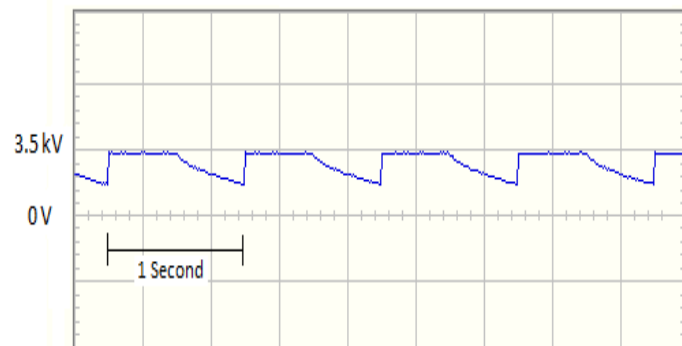


Aim is to create irregular electric fields

- ✈ Reduce energy requirement
- ✈ Avoid mosquito learning



HV Generator Pulses Applied on Copper Plates

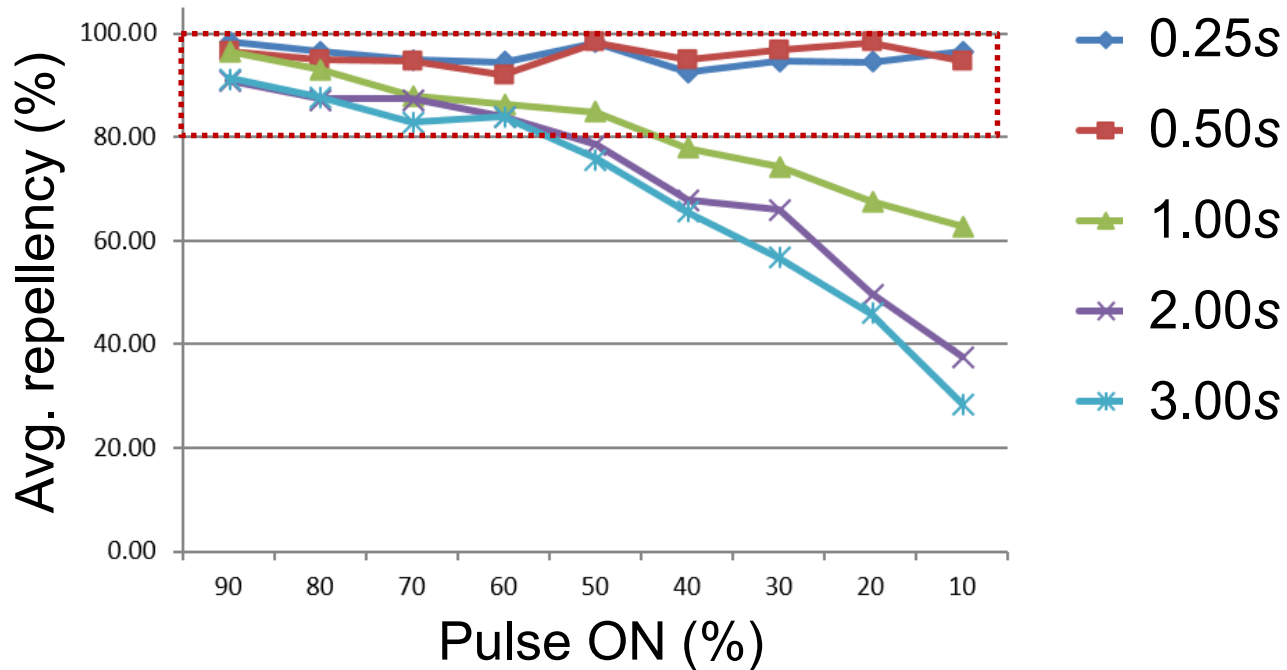


# High power pulsed electric fields



## Pulsation vs. Repellency

(Applied voltage = 3.5 kV, Distance btw copper electrodes = 3.2 cm, Electrode's width = 6 cm)





# Electric field technology works

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Voltage needed to repel depends on:

- ✈ Electrode material
- ✈ Geometry of electrodes
- ✈ Distance between electrodes
- ✈ Insulation of electrodes

To be tested:

- ✈ Different climatic conditions (field tests)
- ✈ Additional vector mosquito species (but tested on highly persistent mosquito species (*Aedes*))

# One centerpiece, different product ideas (Biogents)

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Technology is patented

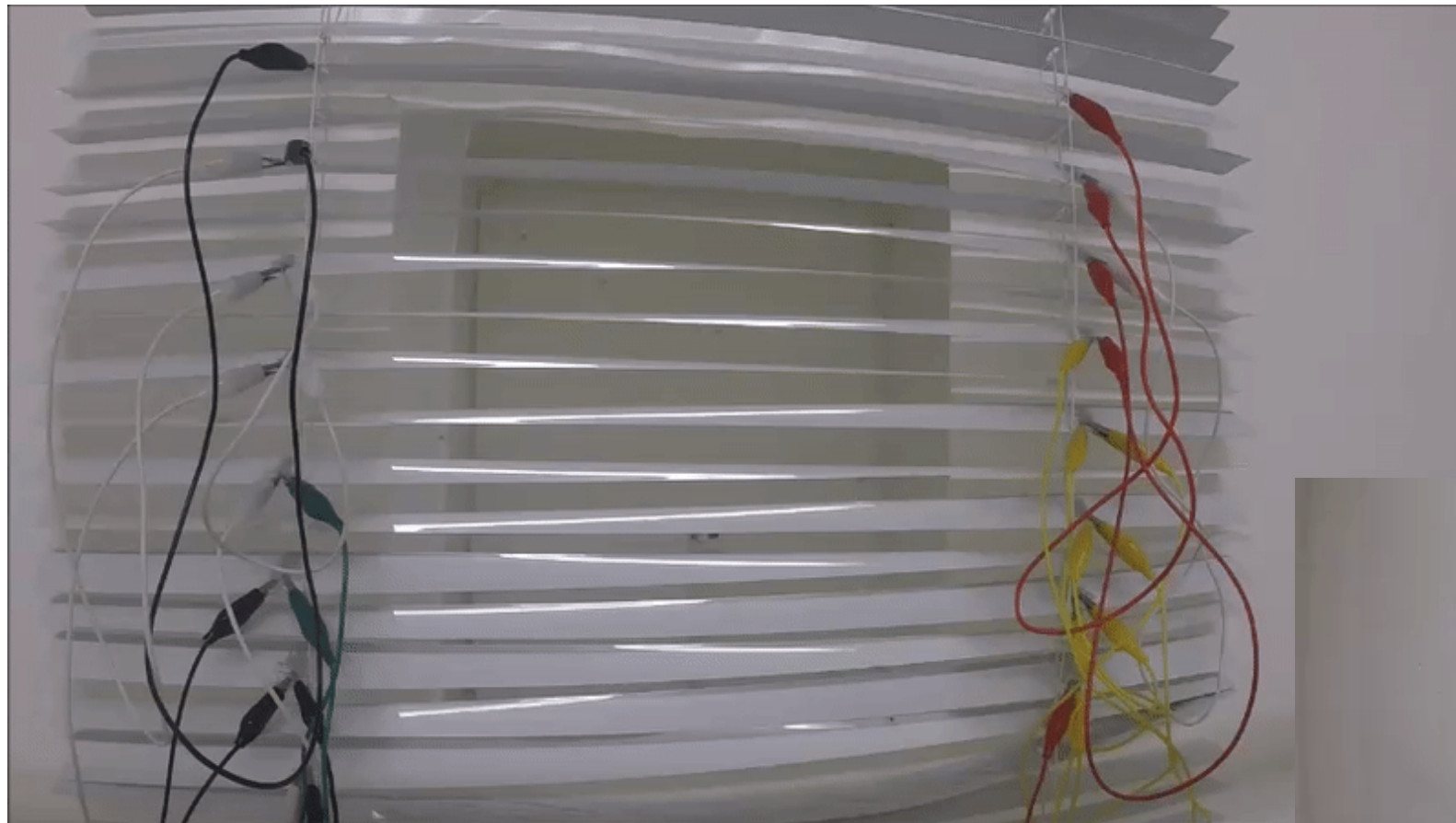
In development: A PnP device that generates and controls the pulsed voltage.

It can be added to a variety of different product types:

- ✿ Window blinds, shades, bars, etc.
- ✿ Metal chains, rods, tapes or bands to install in door openings, eaves or other wall openings
- ✿ Grids for storm drains, water tanks, etc.
- ✿ Mosquito-repellent fences

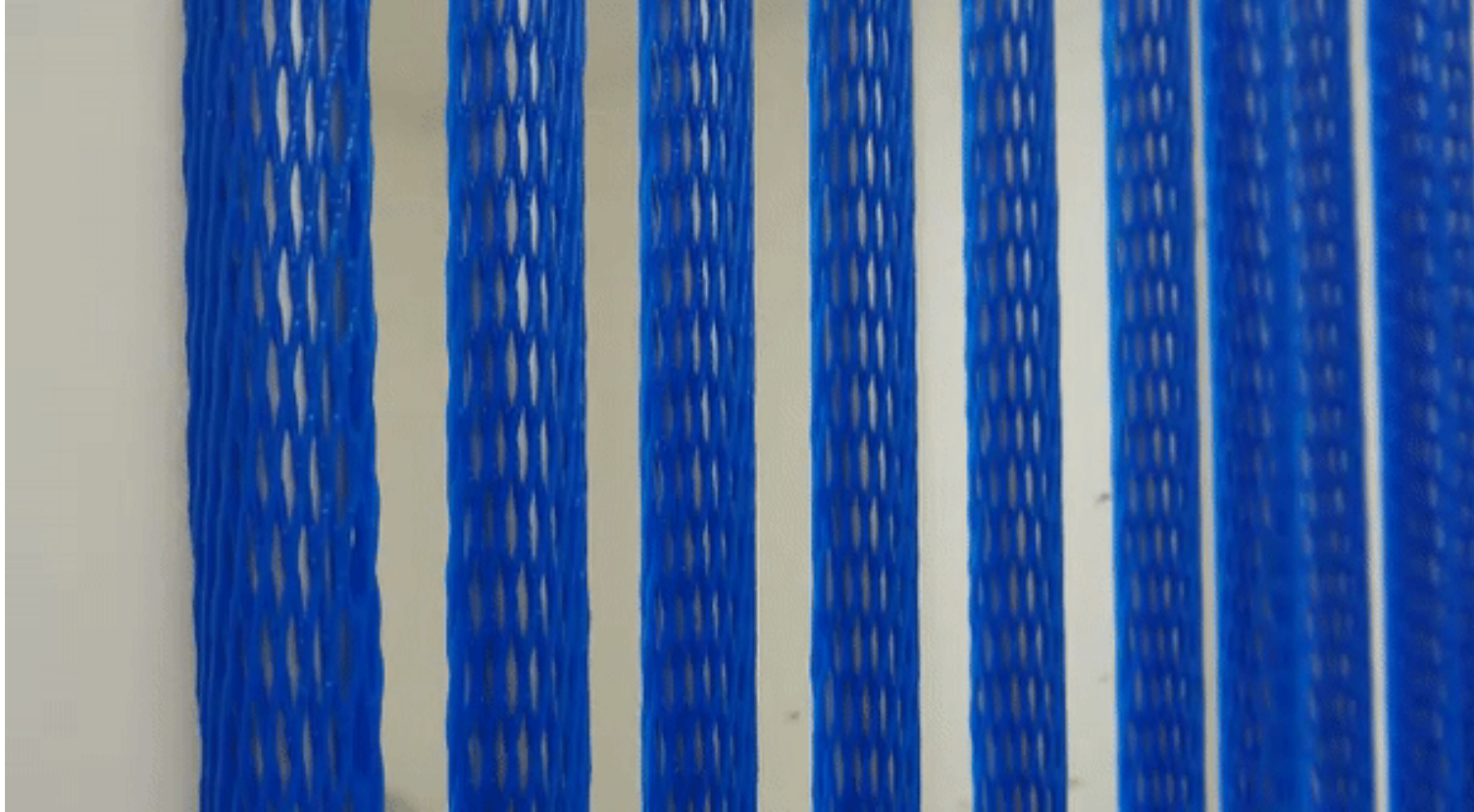
In combination with mosquito traps, a true push-pull mosquito control concept.

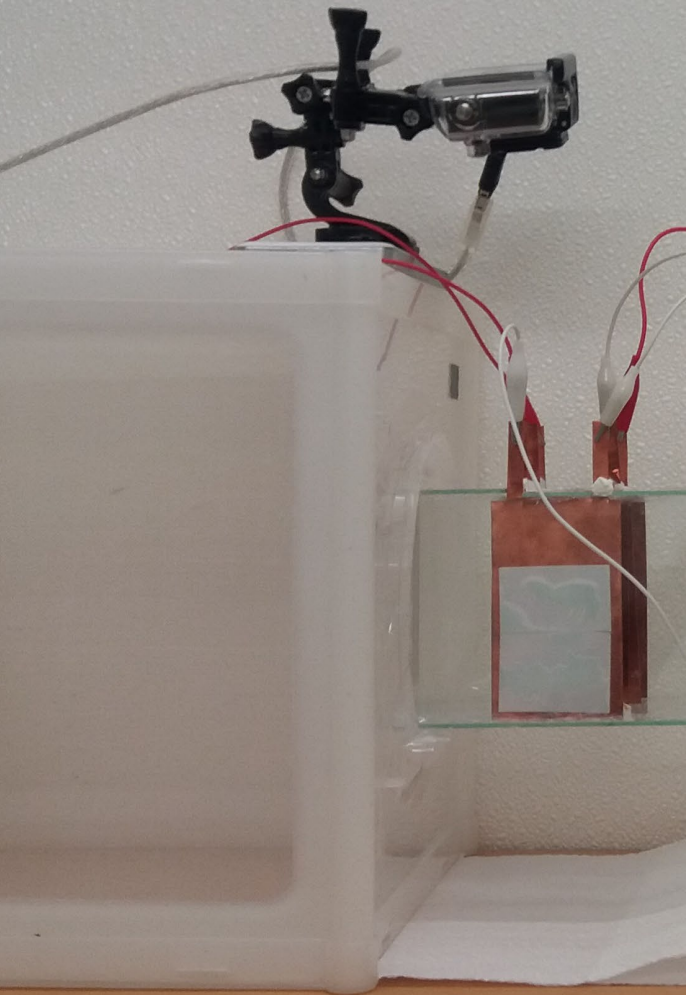
# Some test videos



# Some test videos

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For more information

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