

# **MY START IN PHOTONICS**

Sinan Gundogdu sinang@physik.hu-berlin.de CARLA/Working in Photonics 2022 28.06.2022



# LASERS!



# 2009: MY FIRST LASER: NITROGEN TEA LASER



- Air as medium!
- Atmospheric pressure
- No mirrors
- Superluminescent
- Ultraviolet
- 2 ns pulse!

https://physicsopenlab.org/2020/07/16/diy-nitrogen-tea-laser/

# QUANTUM CASCADE LASERS

 $\sim$ 2012-2018









# **BILKENT UNIVERSITY**

Physics department



Number Мовкац Москва Litagen Dänemark. Vereinigtes Königreich Belarus Irland Polen Niederlande **Election** Warschau London Deutschland NATE Belgien Tschechien Ukraine Slowakei Moldawien Österreich Ungarn Frankreich Rumänier Kroatien ANKARA Serbien Italien Georgie Bulgarien Portugal Madnd Griechenland Spanien Lissabon Türke Syrien

Lettland

Where I made my lasers

## BRAINSTORMING



# FUN FACT:

First medical application of the lasers: Hair removal (together with eye surgery) What did they use before lasers?



# TO MAKE THE BEST LASER HAIR REMOVER

## LASER HAIR REMOVAL Exposure to pulses oflaser light The melanin absorbs After Before the light and heats up

## **IMAGE PROCESSING & SCANNING**



https://puremedlaserclinic.com.au/laser-hair-removal/how-does-laser-hair-removal-work/

# STARTING A TEAM



# **PROTOTYPES** 2015-2018

### Second prototype: Thermoformed

First prototype: Server rack





<image>

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### Third prototype

## KOREA: IBS PHYSICS OF COMPLEX SYSTEMS (PCS) 2019-2021 AS POSTDOC

**IBS Headquarters** 

Typical Korean Street Bell of King Seongdeok



- Topologic photonics
- Laser dynamics •
- **Metamaterials** •
- **Optical lattices** •

## pcs.ibs.re.kr

### Daniel Leykam



### Sergej Flach



## **BERLIN: HUMBOLDT UNI.** INTEGRATED QUANTUM PHOTONICS GROUP (IQP)





2021-Today Dr. Tim Schröder Aluminum Nitride – Diamond nanophotonics



## www.physik.hu-berlin.de/en/iqp

# THANKS!

No cats were harmed in the making of this video

She might be slightly annoyed though.

