TITLE of the setup

Short introduction of what to expect from the setup goes here.

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Author 1

Author 2

V0; Date

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## Motivation

* Why we want to do it?
* What’s the major goal?
* Where can you find this?

Fancy Image can go here! (SRC)

Goals  
At the end you should have learned the following:

* What is light?
* What is diffraction?
* 3D printing with UC2
* Etc.

Outline

Coarse Overview of necessary steps

1. Get the Parts ready
   1. Download
   2. 3D print
   3. Assembly
2. Build a \*XXX
3. Do Experiment 1
4. Do Experiment 2
5. Conclusion

# Prepare the \*XXX Setup (Practical Part)

Here we want to show the basic system description and how the different parts interact with each other.

## Full Setup

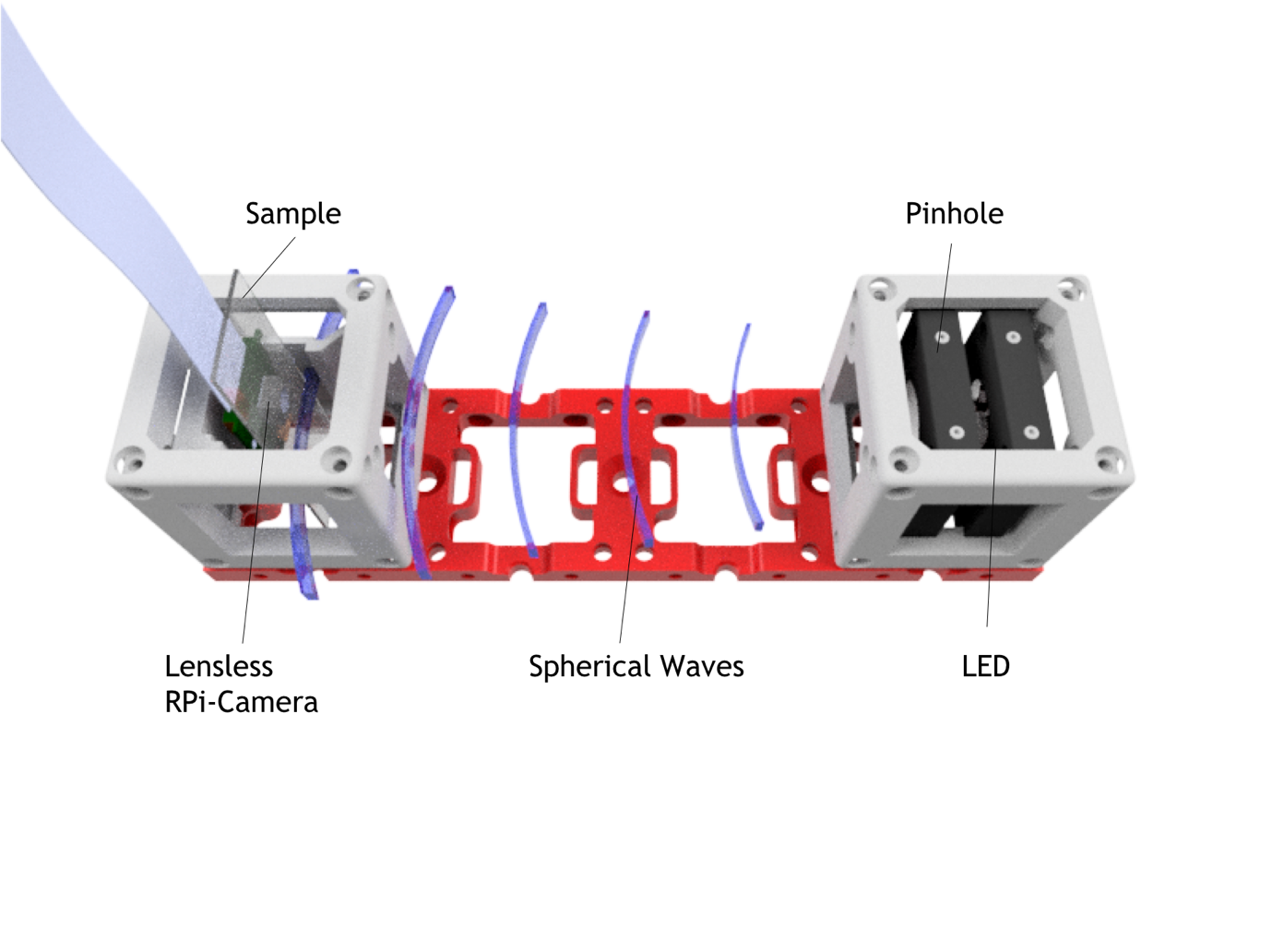


Figure 1 – This is how it should look like once it’s ready.

## Bill of Materials

|  |  |  |  |
| --- | --- | --- | --- |
| Quantity | Description/Name | Image | Price |
| 1 | Grundplatte (1x4)   * <https://github.com/bionanoimaging/UC2-GIT/blob/master/CAD/INLINE_HOLOGRAM/STL/INLINE_HOLOGRAM_00_Base_4x1_v0.stl> |  | 1€ |
| 2 | Cube (2x), 2 Teile   * <https://github.com/bionanoimaging/UC2-GIT/blob/master/CAD/INLINE_HOLOGRAM/STL/INLINE_HOLOGRAM_10_Cube_v0.stl> * <https://github.com/bionanoimaging/UC2-GIT/blob/master/CAD/INLINE_HOLOGRAM/STL/INLINE_HOLOGRAM_10_Lid_el_v0.stl> |  | 1€ |
| 1 | LED (Royal blue, i.e. 1W-3W, Star PCB attached)   * <https://www.amazon.com/Led-World-Extreme-Royal-445-450nm/dp/B00MNB4LJU> |  | 2€ |
| 1 | RPi Camera v2   * <https://shop.pimoroni.de/products/raspberry-pi-camera-module-v2-1-with-mount>   Alternative für Pi Zero:   * <https://shop.pimoroni.de/products/raspberry-pi-zero-camera-module> |  | 15€-33€ |
| 1 | Raspberry Pi V3 + 1SD Micro Card (prebuilt binaries)   * <https://shop.pimoroni.de/products/raspberry-pi-3-b-plus>   Alternativ:  1x Raspberry Pi Zero + 1SD Micro Card (8GB)   * <https://shop.pimoroni.de/products/raspberry-pi-zero-w> | /var/folders/4w/k4yhf14j7xsbp2jd85yk555r0000gn/T/com.microsoft.Word/Content.MSO/45DC5D6D.tmp | 45€  /  15 € |
| 2 | Thorlabs CP02   * <https://www.thorlabs.com/thorproduct.cfm?partnumber=CP02>   Alternative:  Selber drucken |  | 20€ |
| 1 | Netzteil, 5V USB, Raspberry   * <https://www.reichelt.de/usb-ladegeraet-5-v-2500-ma-micro-usb-nt-musb-25-sw-p167078.html?PROVID=2788&gclid=Cj0KCQjw3ebdBRC1ARIsAD8U0V5RBH3hKsPJiLh7Pk8SBP6UYqJqPXgTA_QfsG1lmuD5Y75ie5qSEMIaAiNCEALw_wcB&&r=1> |  | 5€ |
|  | Zusätzliches Material, was ggf. bereits verfügbar ist.   * Alufolie * Alumnium Sheet ca. 30x30 mm, rund? (dickere Aluminium Folie) * Dünne Nadel * Klebestreifen * USB-Stick * Tastatur/Maus |  | 10€ |
| 16 | Kugelmagneten NeoDym, D=6mm   * <https://www.ebay.de/itm/50x-POWER-NEODYM-KUGEL-MAGNET-6-mm-N35-EXPERIMENT-BASTEL-TAFEL/201693302926?hash=item2ef5db908e:g:QgUAAOSwpLNYBJt7> |  | 10€ |
| 16 | Schrauben (DIN 912, M3, 18mm, kein Edelstahl! Müssen magnetisch sein-> Eisen!)   * <https://www.conrad.de/de/toolcraft-839670-zylinderschrauben-m3-12-mm-innensechskant-din-912-iso-4762-stahl-88-geschwaerzt-100-st-839670.html> |  | 1€ |
| 4 | Alu-Stangen (50mmxD6mm)   * <https://www.ebay.de/itm/7960-Alu-Aluminium-Rundstab-6-12mm/321920077077?hash=item4af3ee8d15:m:m6S16XrMjjoQHAna_7z12Ug> |  | 4 € |
| 1 | 100R Widerstand, 1W, oder 4x 400R 0.25W parallel |  | 1 € |
| 1 | (USB) Kabel (defektes Gerät, Schrott), ca. 40cm |  | 1 € |
|  |  |  |  |
|  |  |  |  |
| 1 | Proben: Duschgel mit Glitzereffekt, Mikrokugeln, Epithelzellen |  |  |
| 1 | Probenpräparationskit,  Pipette, Deckgläschen, Objektträger (120x70mm)  <https://www.msg-praxisbedarf.de/MENZEL-Objekttraeger-MIT-Mattrand-50-Stueck.htm?websale8=msg&pi=58150&ref=froogle&subref=MEG101126M&gclid=Cj0KCQjw3ebdBRC1ARIsAD8U0V5Luk5NOQ_5EgCx-r_ZP_9B5Slwe-cPsXAOKK-Mx73bsF8DHiD24gEaArfkEALw_wcB> |  | 5€ |

Assembly

Quick explained Photo-Story to show how the parts belong together.

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Software Used in this Tutorial **(Optional)**

* Fiji (<https://imagej.net/Fiji/Downloads>)
* Anaconda Python (3.6) ( <https://www.anaconda.com/download>)
* Cura (<https://ultimaker.com/en/products/ultimaker-cura-software>)
* Tinkercad.com

## Prepare Software to make Software work (Optional)

* Download Pi-Image
* Flash Pi-Image
* Connect Pi to Wifi

# Theoretical Part for the \*XXX

Introduction

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Formulas

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# Experiments

Experiment 1

What to do?

What do you observe?

What do you expect?

Why?

Experiment 2

# Conlcusion

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# Usefull links and Ressources

## Ressources

## Links

* <https://www.jpl.nasa.gov/edu/learn/project/how-to-make-a-pinhole-camera/>
* <http://pinholemoustache.com/wp-content/uploads/2015/09/2c-cu-acul-cu-grija-stenopa.jpg>