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Ntambaazi Tonny, CIMET: Phase difference Report Lab 1

```
% This file uses two other functions that are contained in the folder
% provided
% Please check the filter function which was used for applying masks
% to the
% to the respective images
% The other useful file in this lab is the "unw_modified.m" file used
% for
% unwrapping the phase

clear all; close all; clc;

Reference = imread('Reference.tif');
Object    = imread('Object.tif');
radius = 20;
```

Reference image

```
Ref_FT = fft2(Reference);
Ref_FT = fftshift(Ref_FT);
imagesc(log(abs(Ref_FT)));

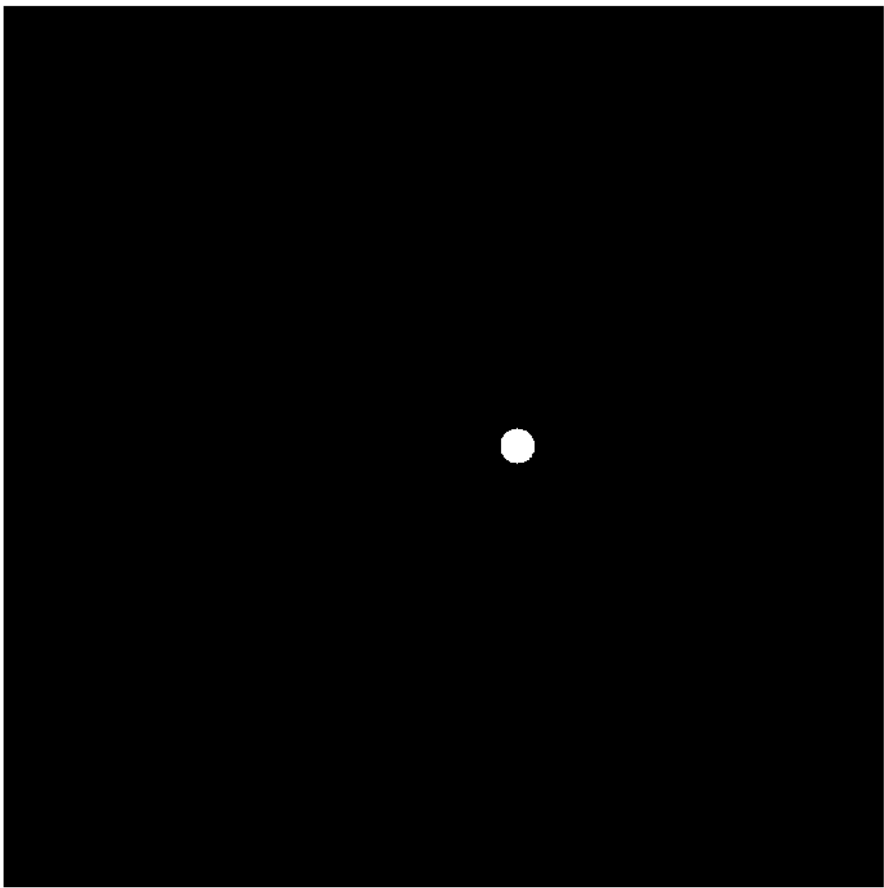
% Applying mask to the image using the filter function
Filt_Ref = Filter(Ref_FT, radius );
figure; imagesc(log(abs(Filt_Ref))); title('Reference filtered
image');

Ref_mask = ifft2(Filt_Ref);
figure; imshow(Ref_mask); title('Reference IFT');

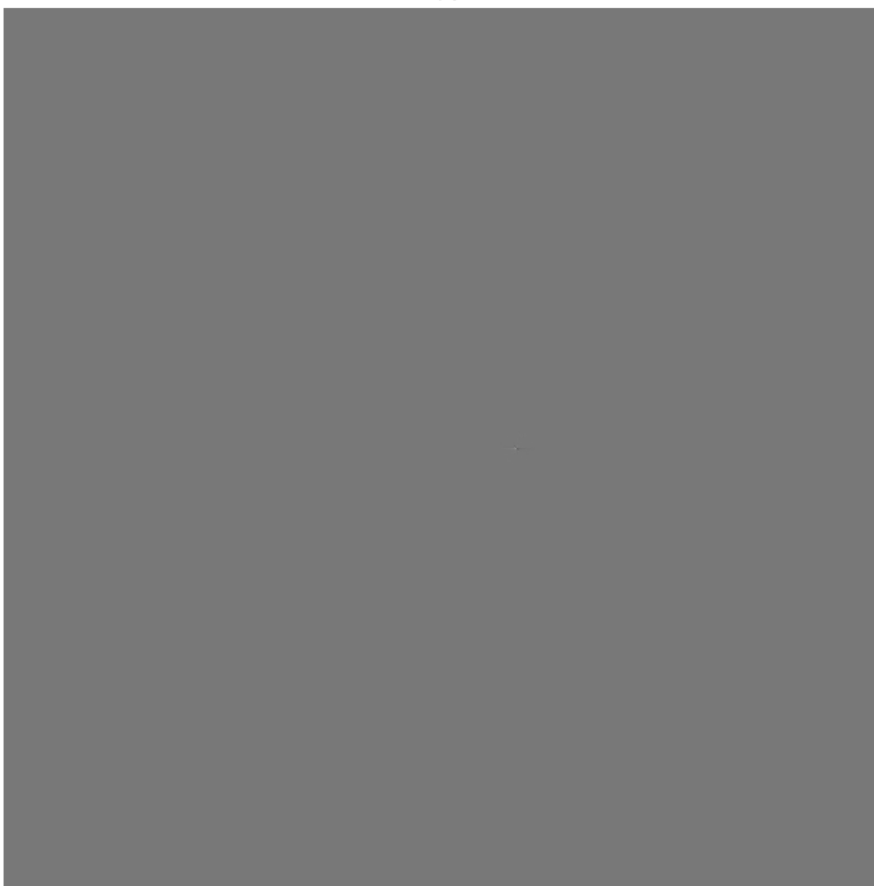
Ref_phase = angle(Ref_mask);

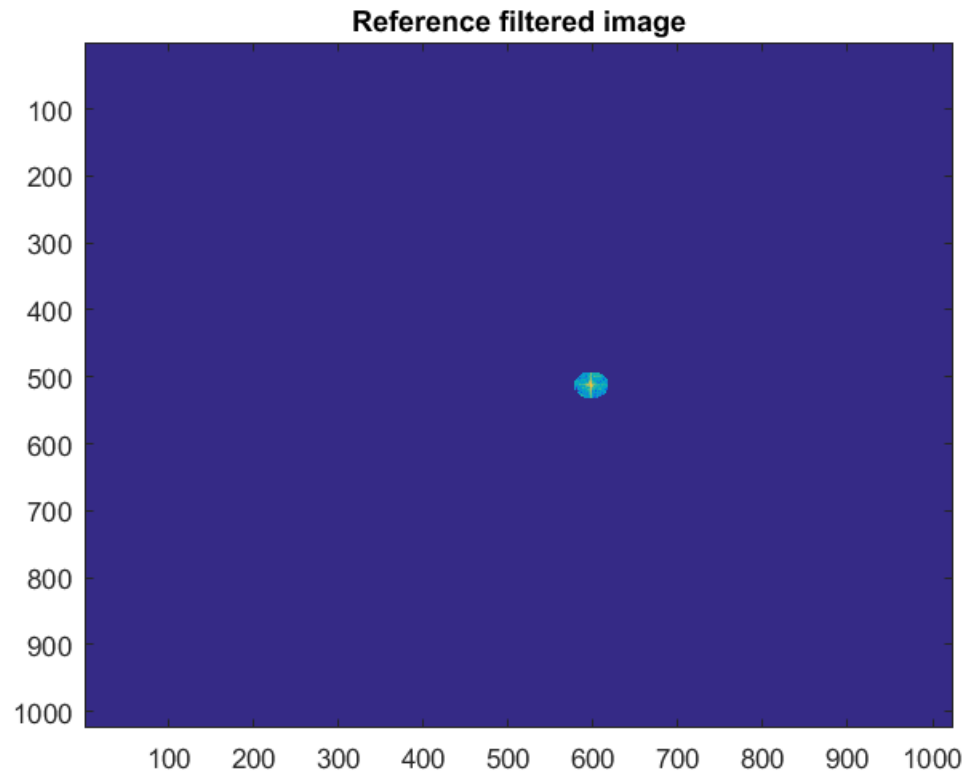
figure; imshow(Ref_phase); title('Reference phase');

Warning: Image is too big to fit on screen; displaying at 67%
Warning: Displaying real part of complex input.
Warning: Image is too big to fit on screen; displaying at 67%
Warning: Displaying real part of complex input.
Warning: Image is too big to fit on screen; displaying at 67%
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```

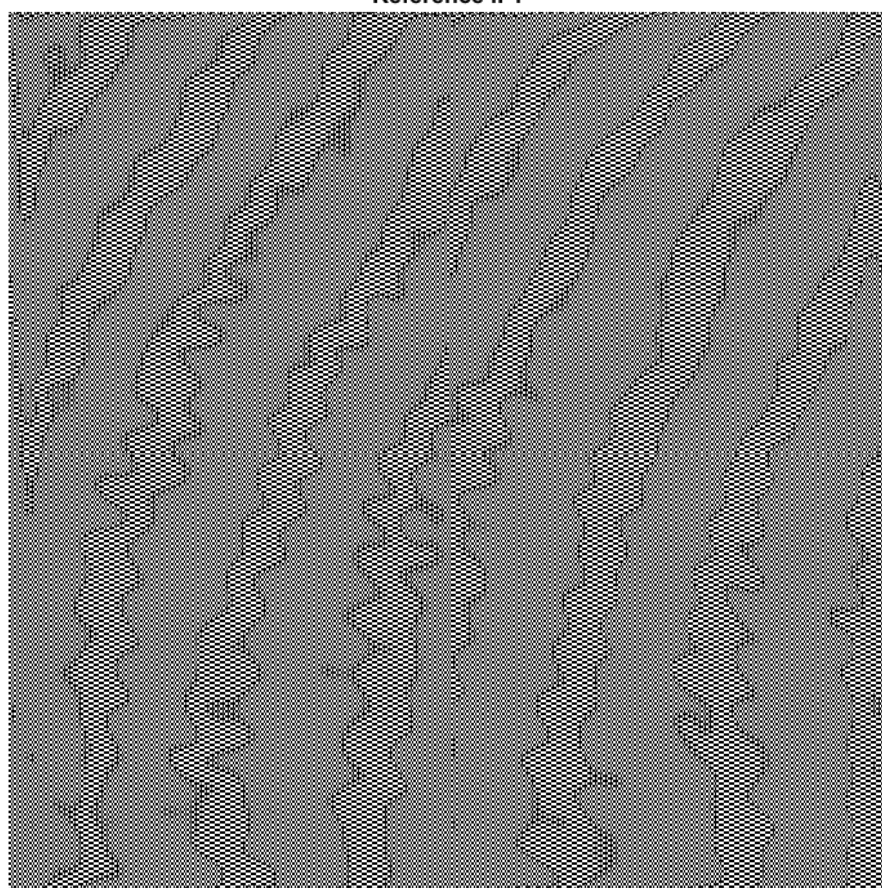


mask

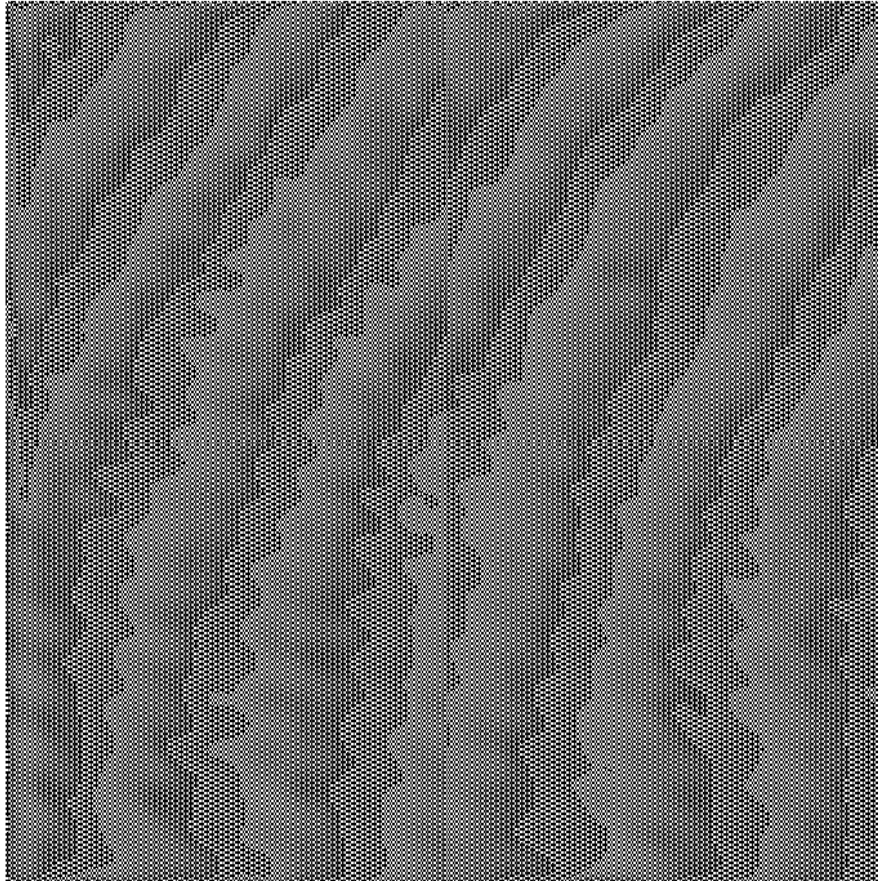




Reference IFT



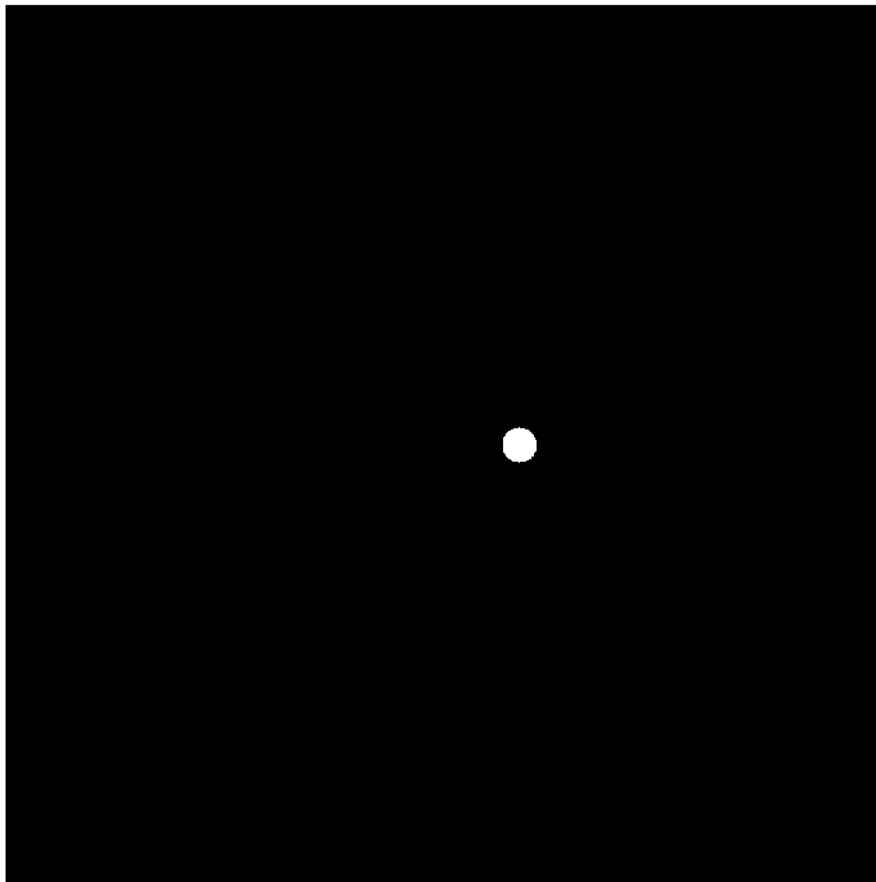
Reference phase



Object image

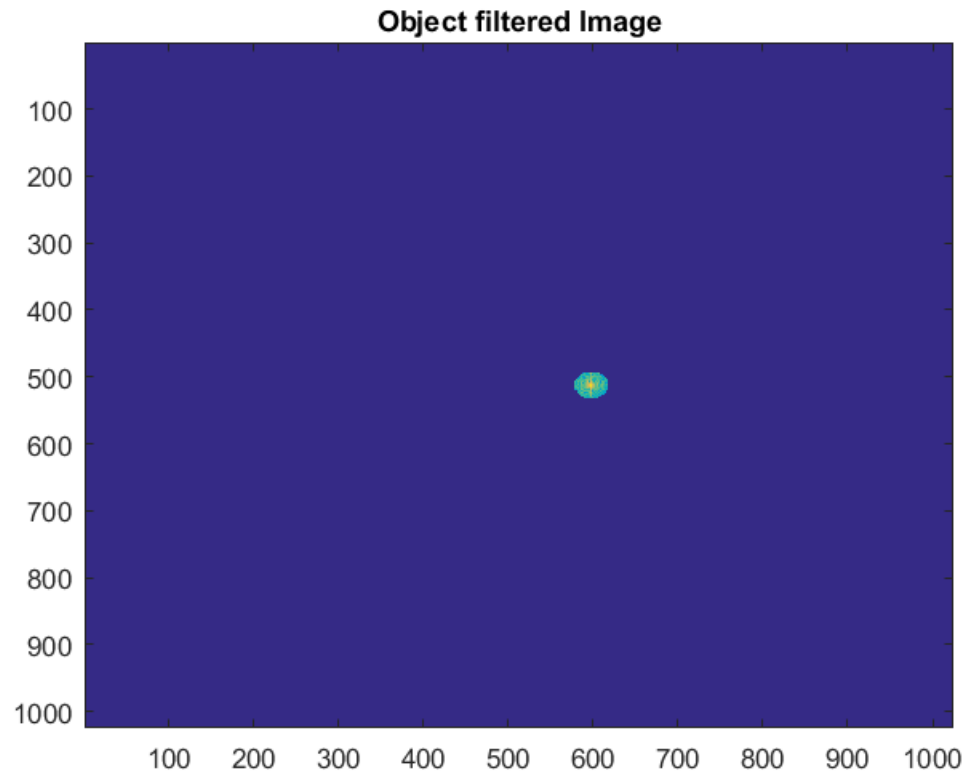
```
Obj_FT = fft2(Object);  
Obj_FT = fftshift(Obj_FT);  
imagesc(log(abs(Obj_FT)));  
  
% Applying mask to the image using the filter function  
Filt_Object = Filter(Obj_FT, radius );  
figure; imagesc(log(abs(Filt_Object))); title ('Object filtered  
Image');  
  
% Applying the inverse Fourier transform  
Obj_mask = ifft2(Filt_Object);  
figure; imshow(Obj_mask); title ('Object IFF');  
  
Obj_phase = angle (Obj_mask);  
figure; imshow(Obj_phase); title('object phase');  
  
Warning: Image is too big to fit on screen; displaying at 67%  
Warning: Displaying real part of complex input.
```

Warning: Image is too big to fit on screen; displaying at 67%
Warning: Displaying real part of complex input.
Warning: Image is too big to fit on screen; displaying at 67%
Warning: Image is too big to fit on screen; displaying at 67%

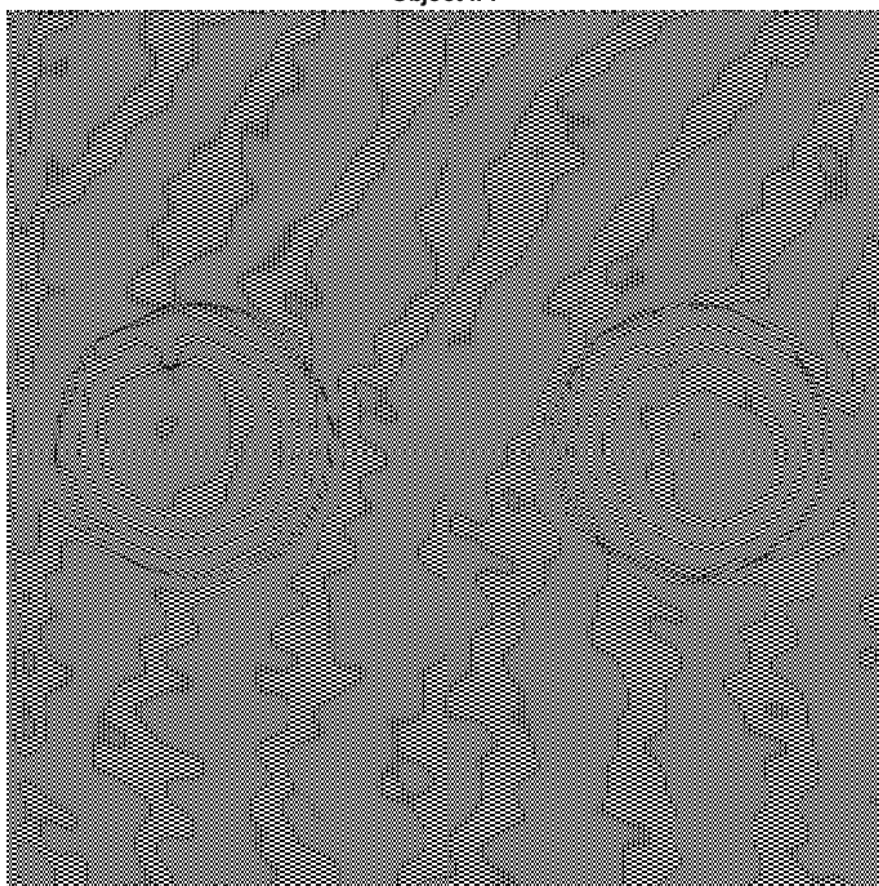


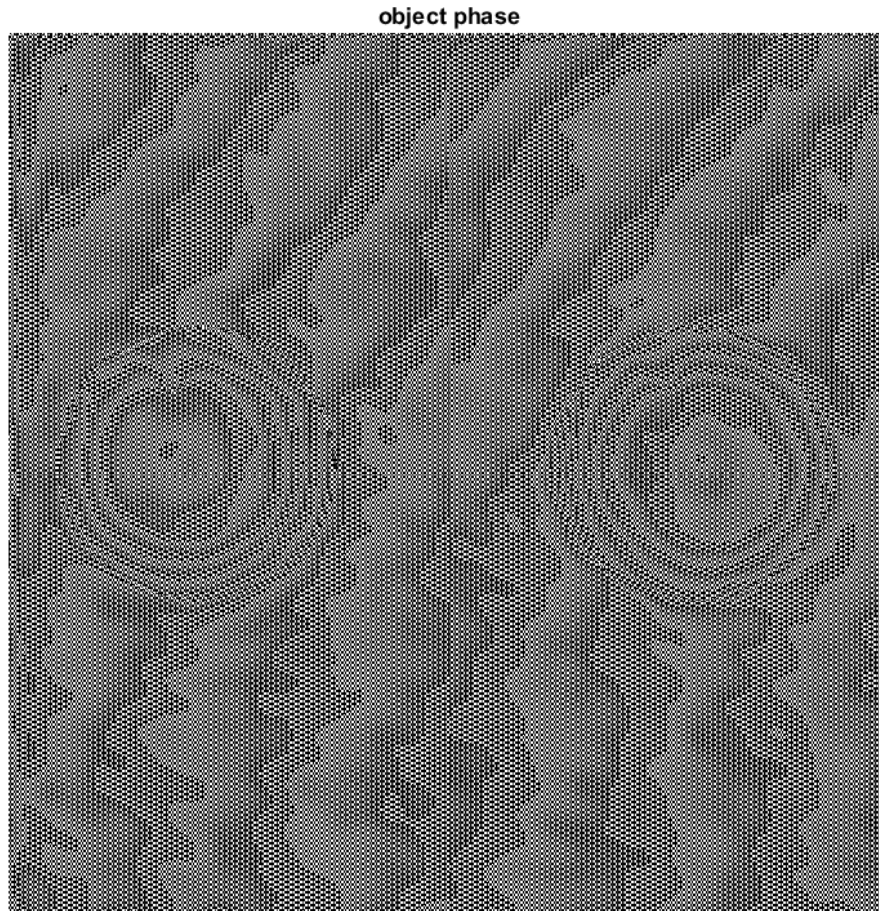
mask





Object IFF





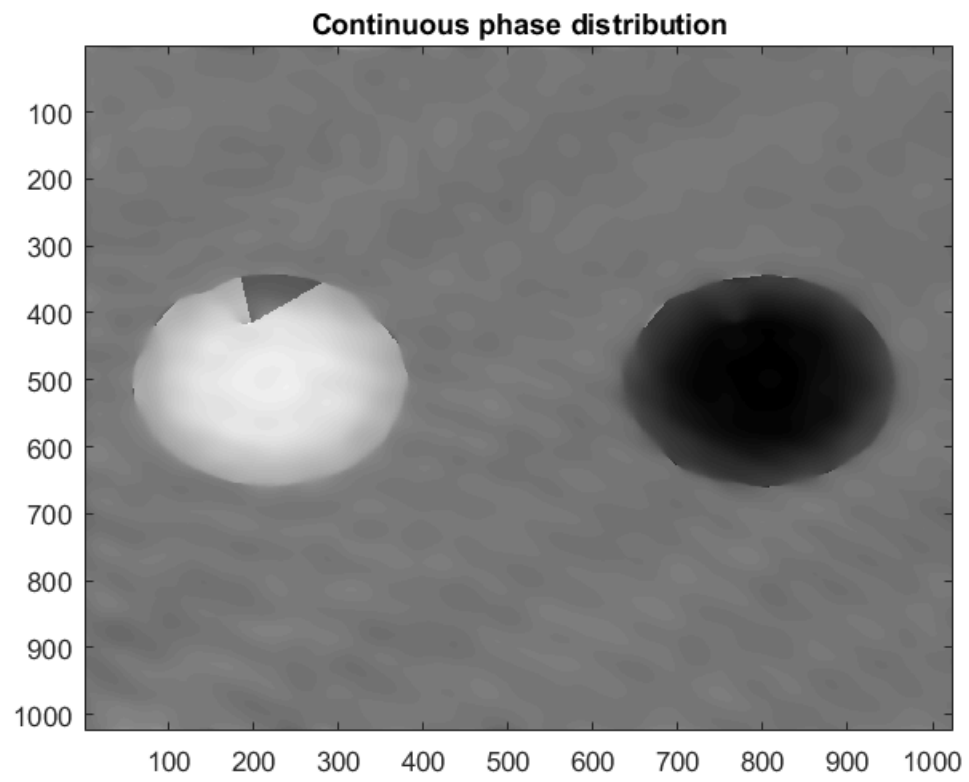
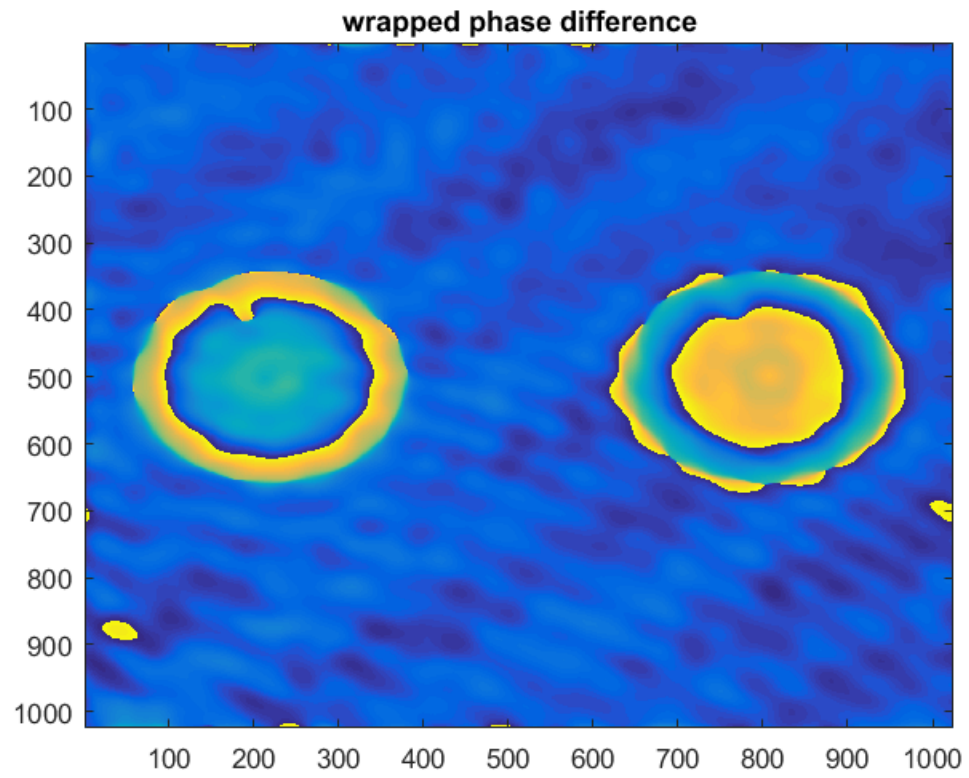
Phase difference

```
phase = Obj_phase - Ref_phase;
phase_value = phase < 0;
Real_phase_value = phase + (phase_value .* (2*3.14));

figure; imagesc(Real_phase_value); title('wrapped phase difference');

% Unwrapping the phase and displaying the final result
unwrap_Gold2_1_modified
figure;
imagesc(unphase)
title('Continuous phase distribution');
colormap(gray)

'unphs6' is not recognized as an internal or external command,
operable program or batch file.
```



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