

研究報告

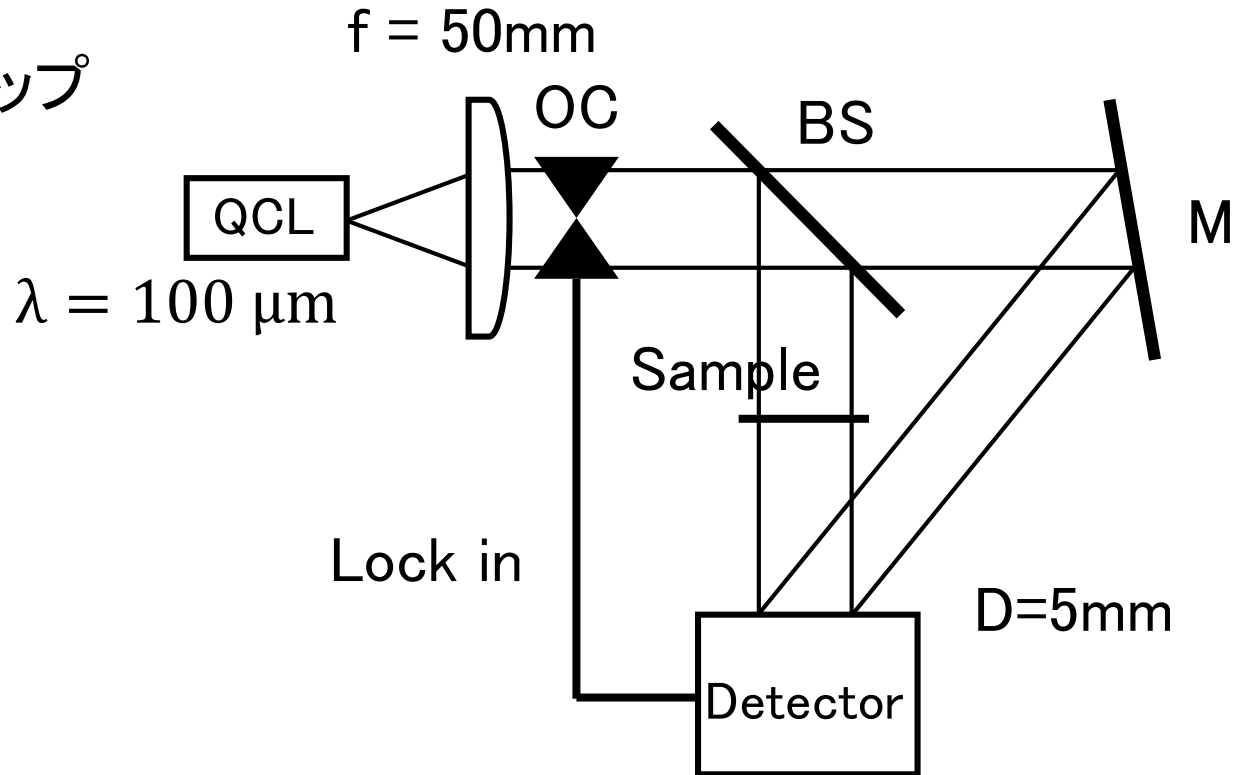
15/09/07

徳島大学 安井研究室 M1
小川 貴之

実験内容

イメージャーのロックイン機能および積算回数を変更した場合の画質の変化を確認し、再構成後のイメージに与える影響を調べた。

セットアップ

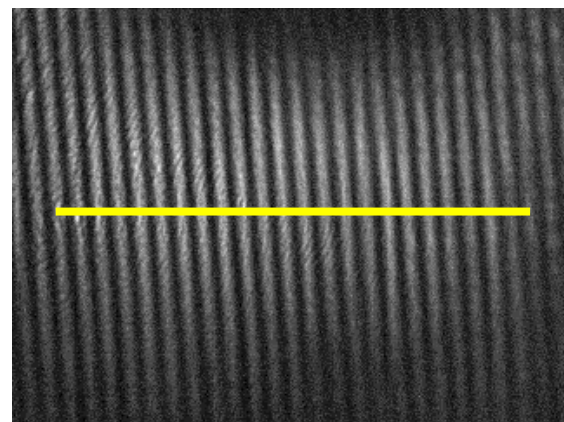
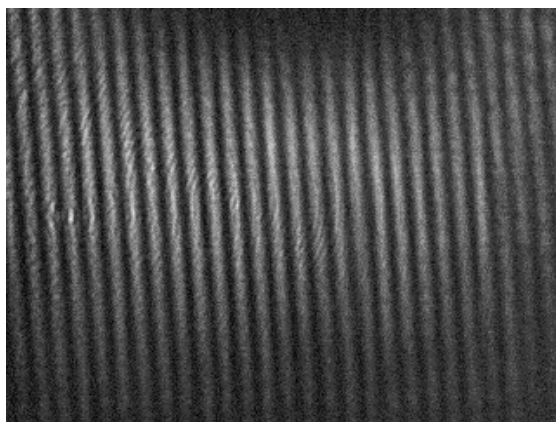
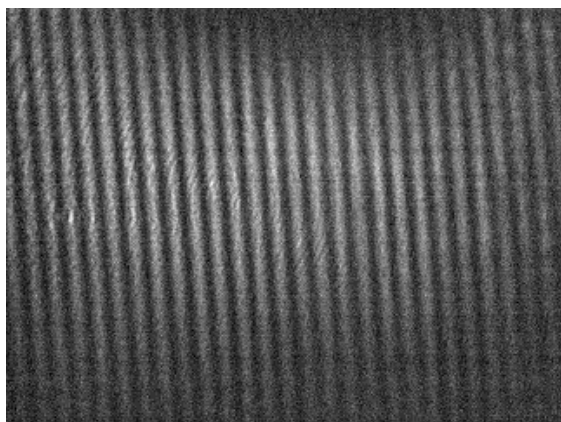


積算回数 1

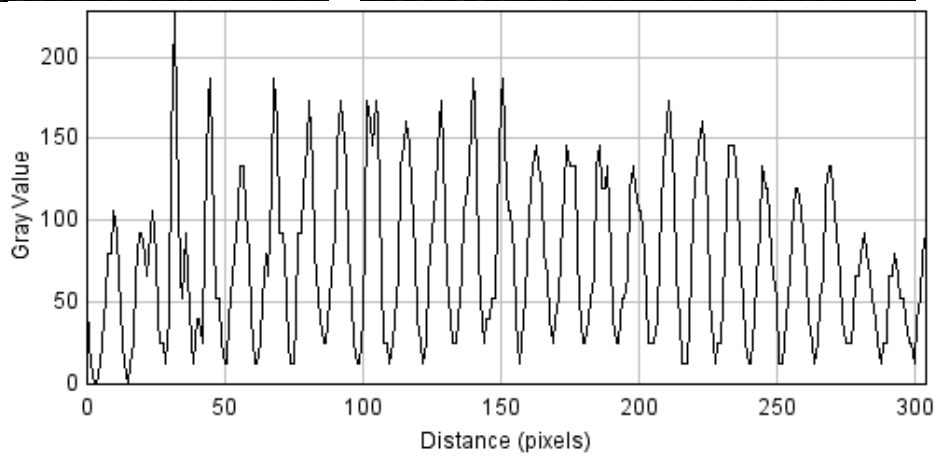
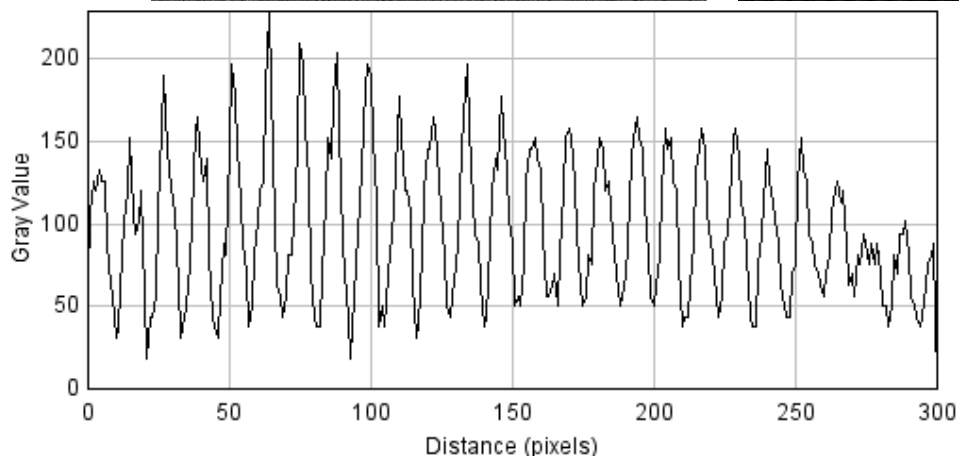
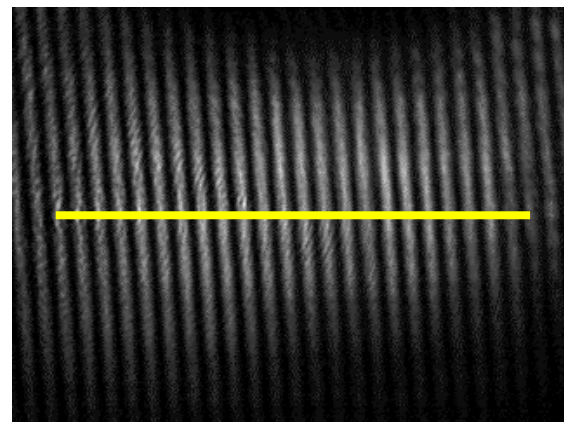
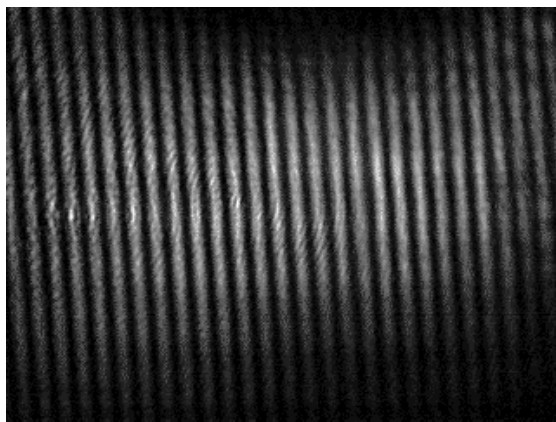
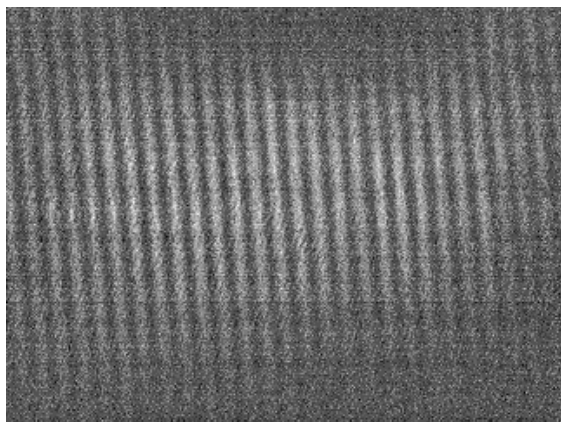
64

128

ロツクインなし



あり

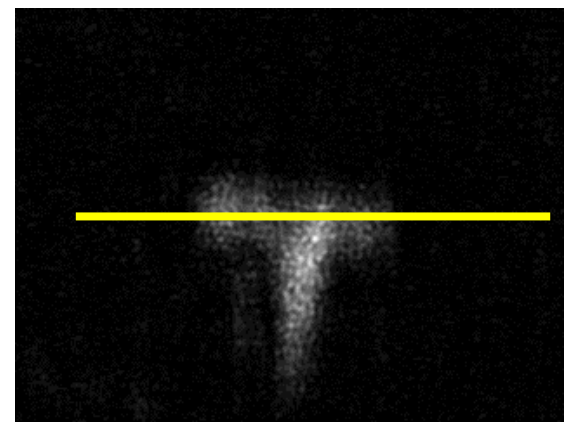
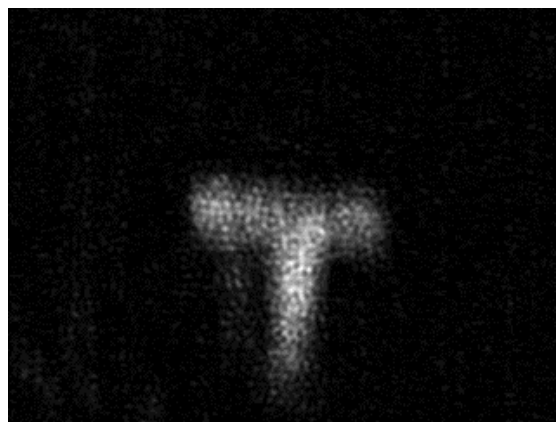
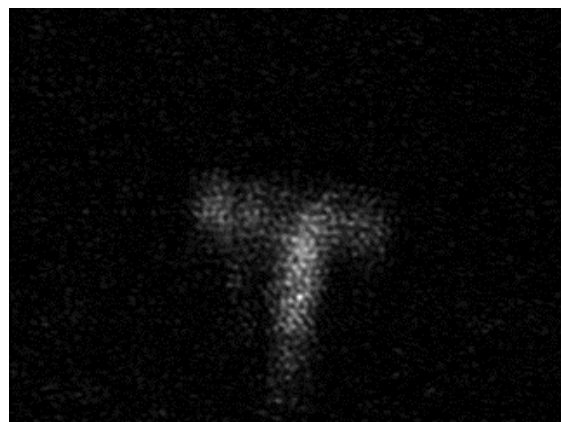


積算回数 1

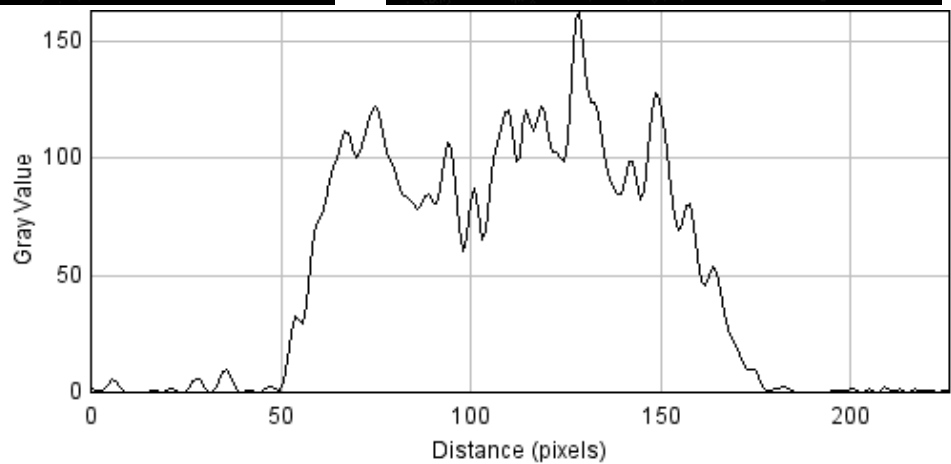
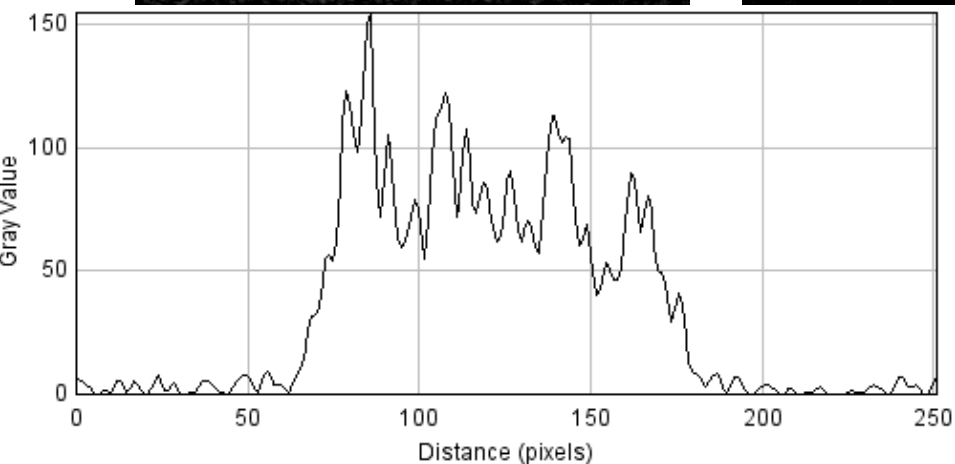
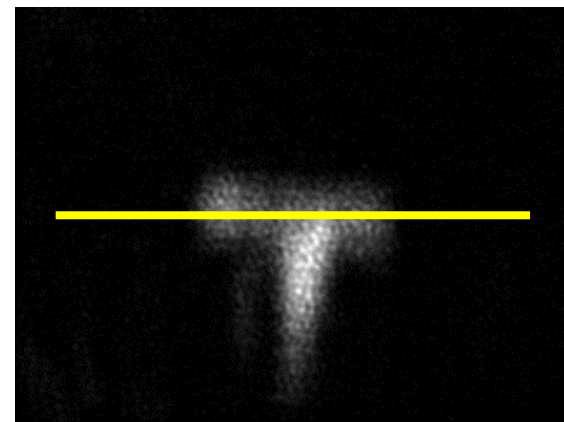
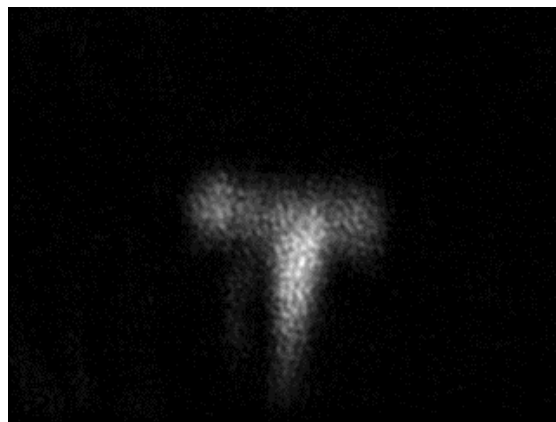
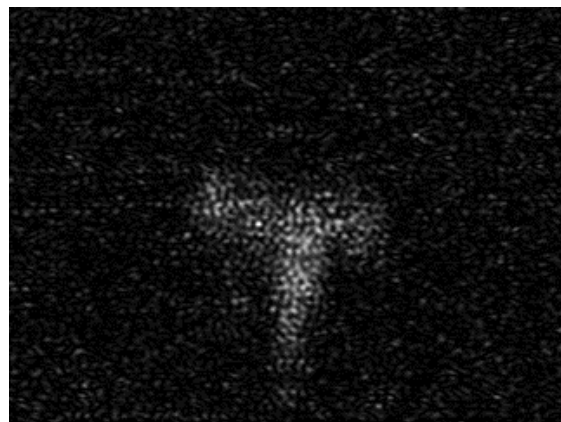
64

128

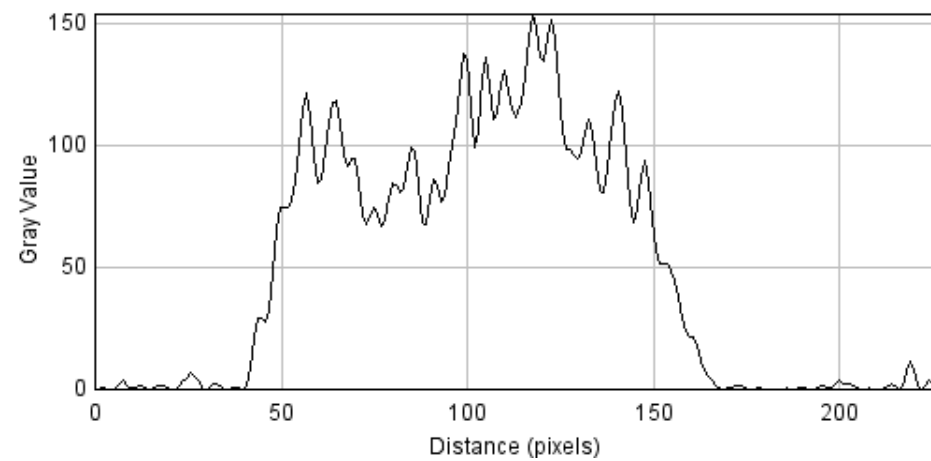
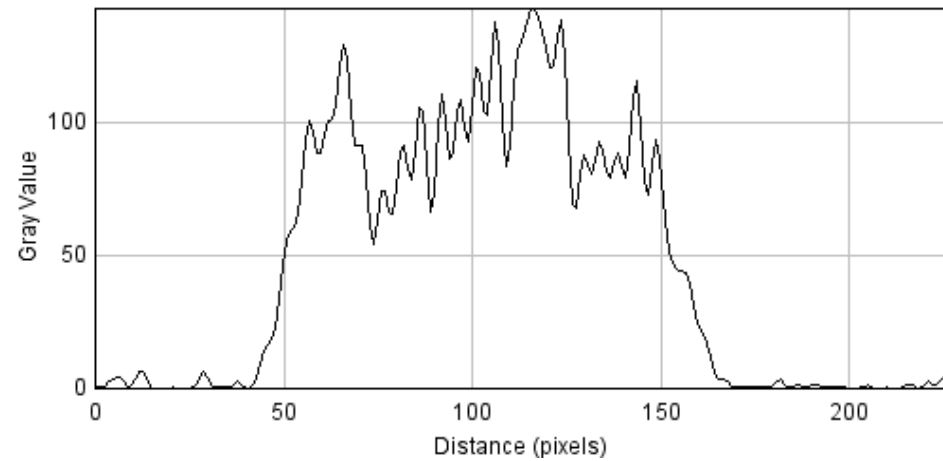
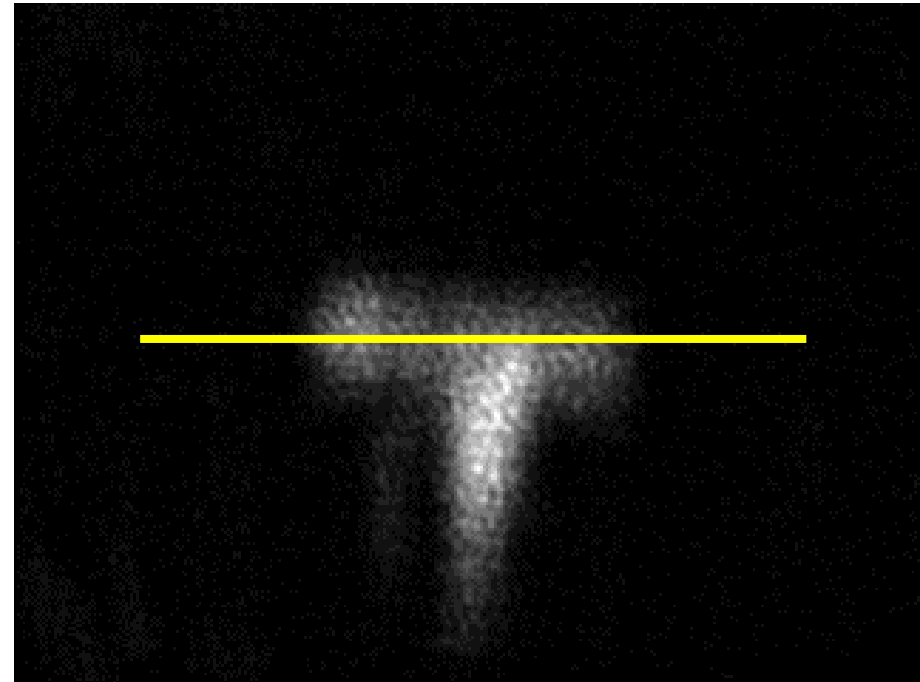
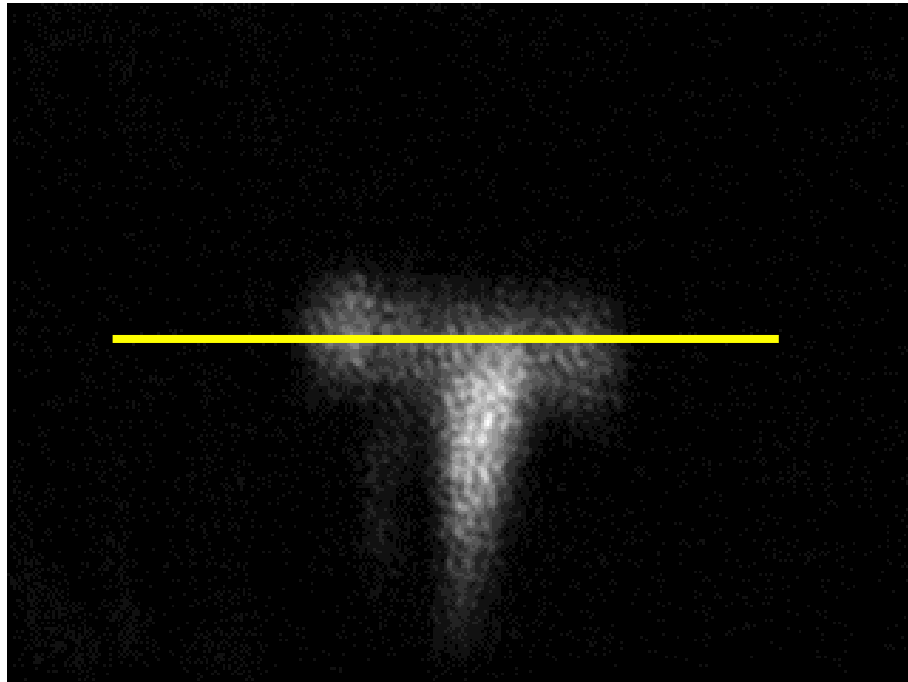
ロツクインなし



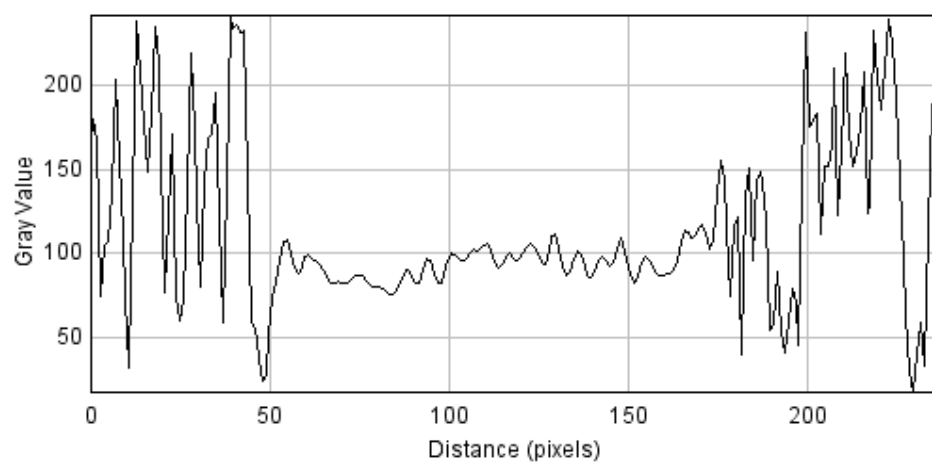
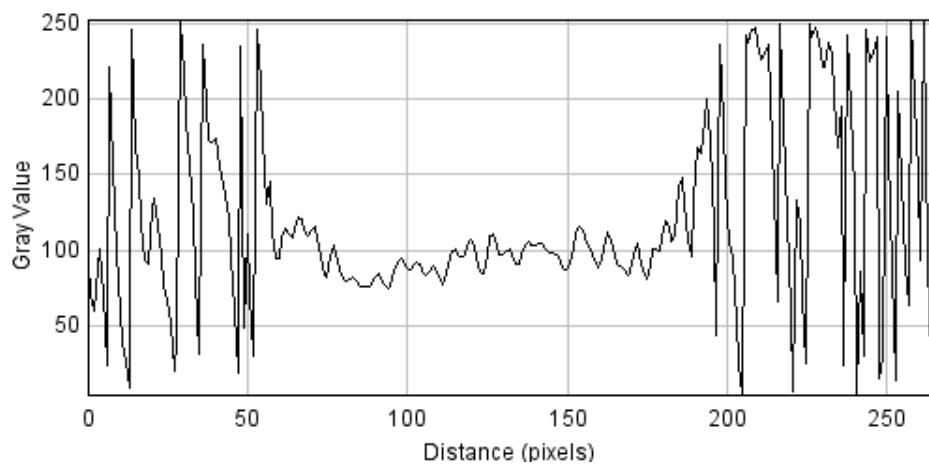
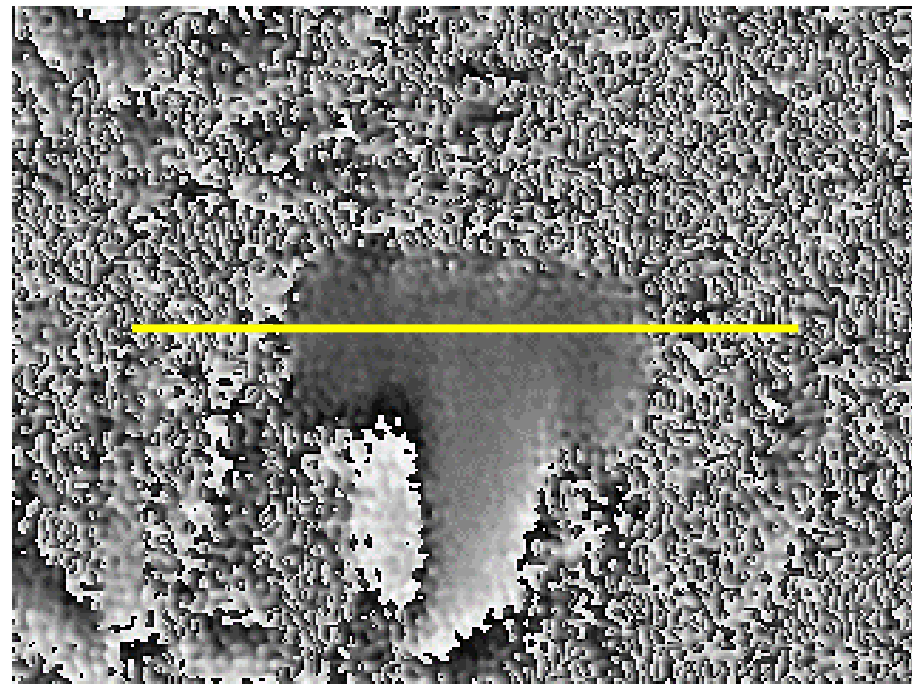
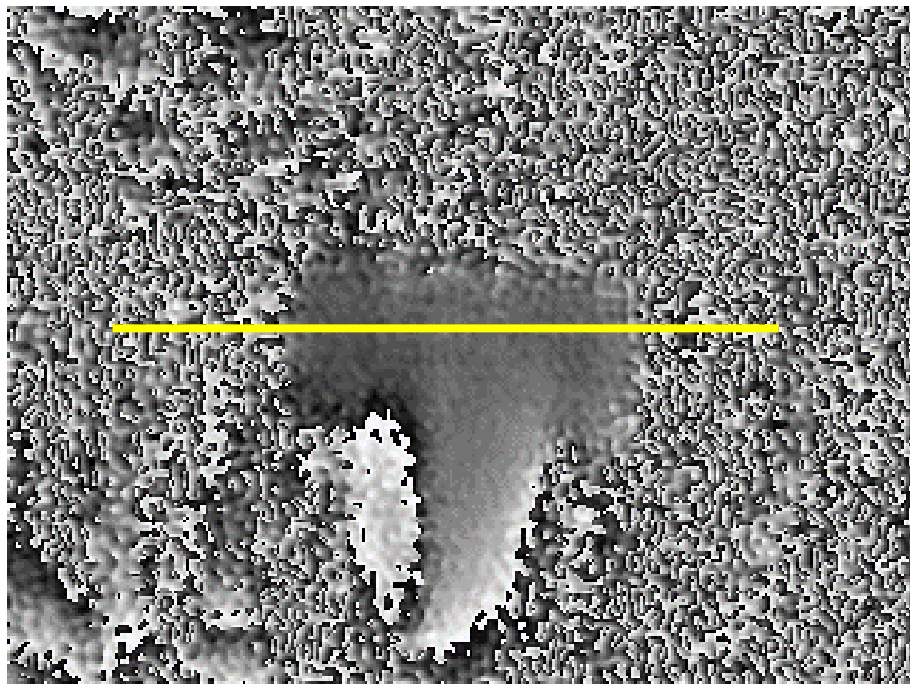
あり



ロックインあり、積算回数 64 と 128 の比較(振幅)

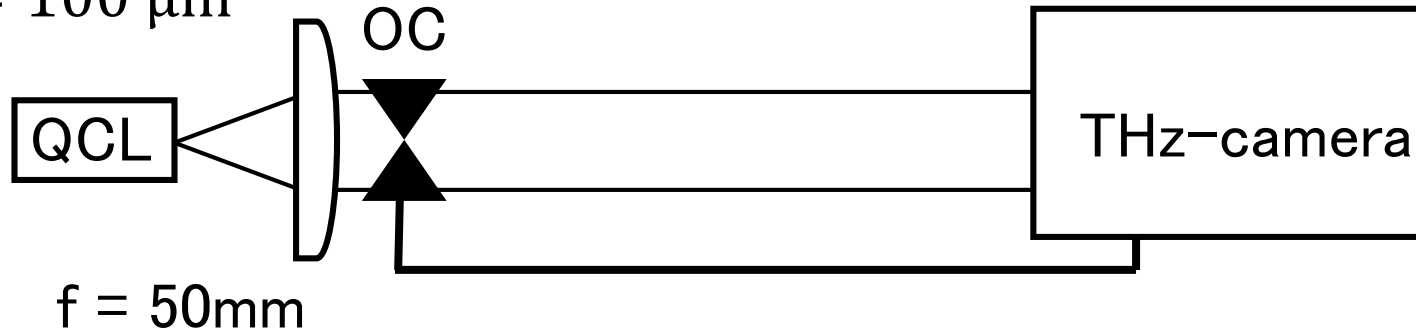


ロックインあり、積算回数 64 と 128 の比較(位相)



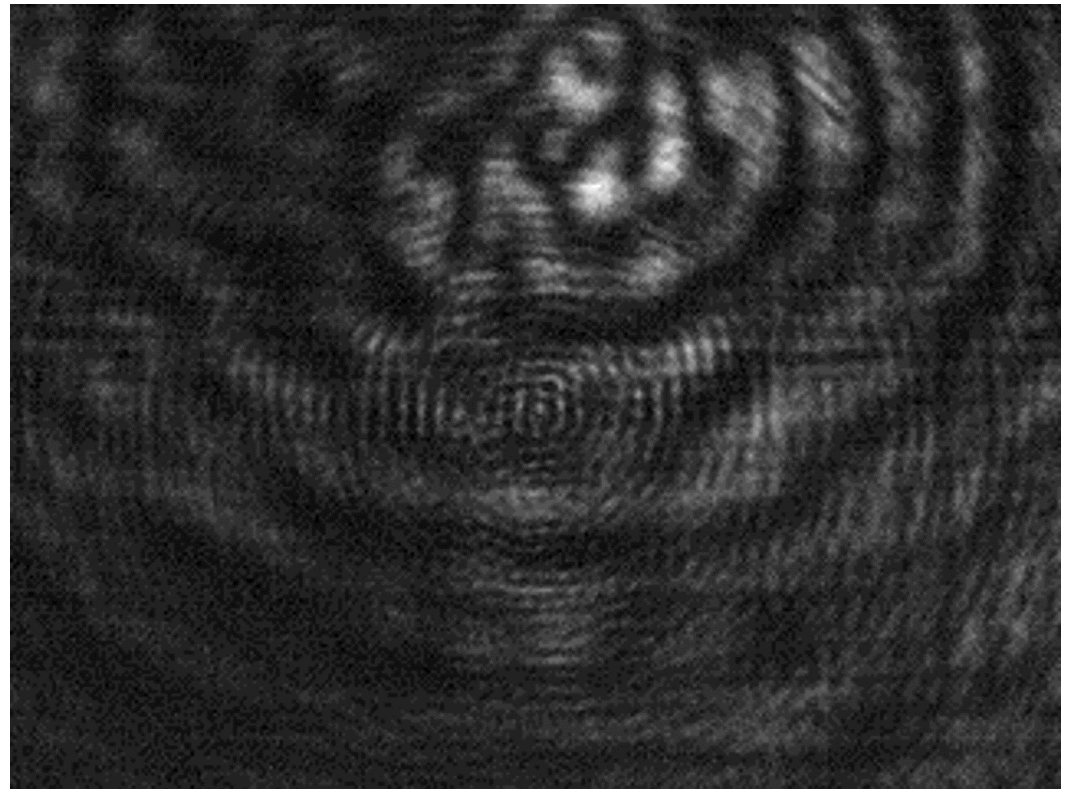
セットアップ

$\lambda = 100 \mu\text{m}$

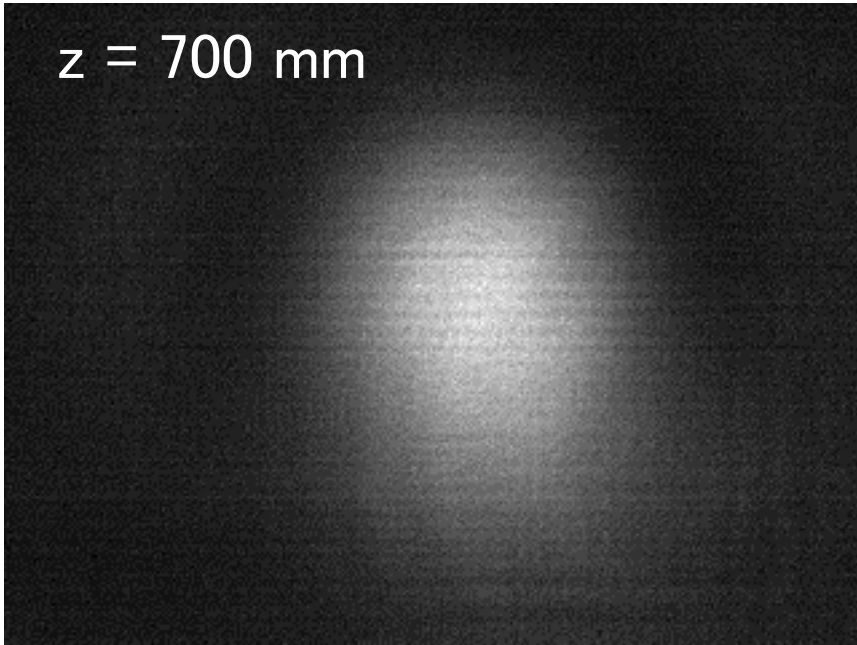


光源からの距離 z

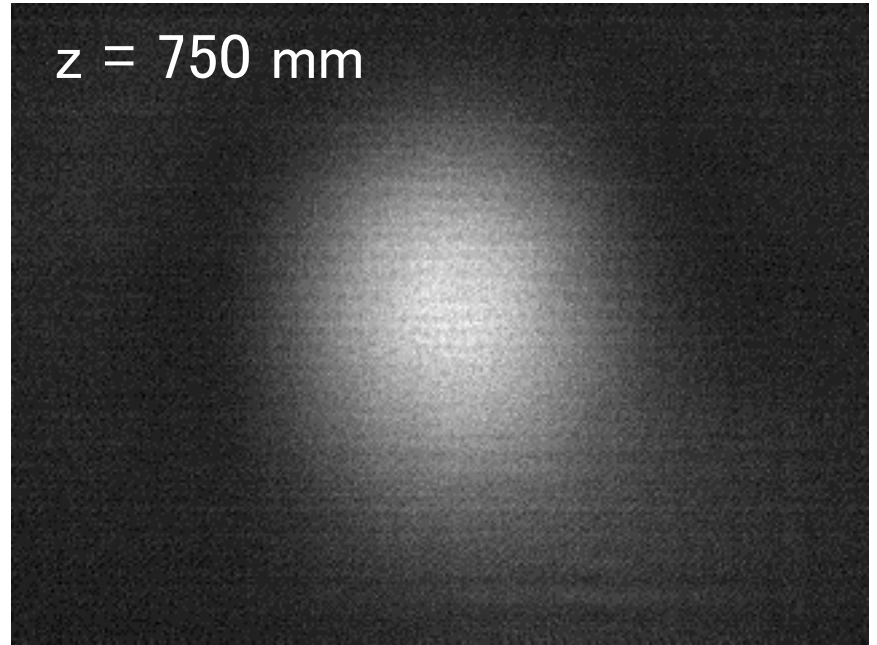
$z = 150 \text{ mm} \sim 1000 \text{ mm}$



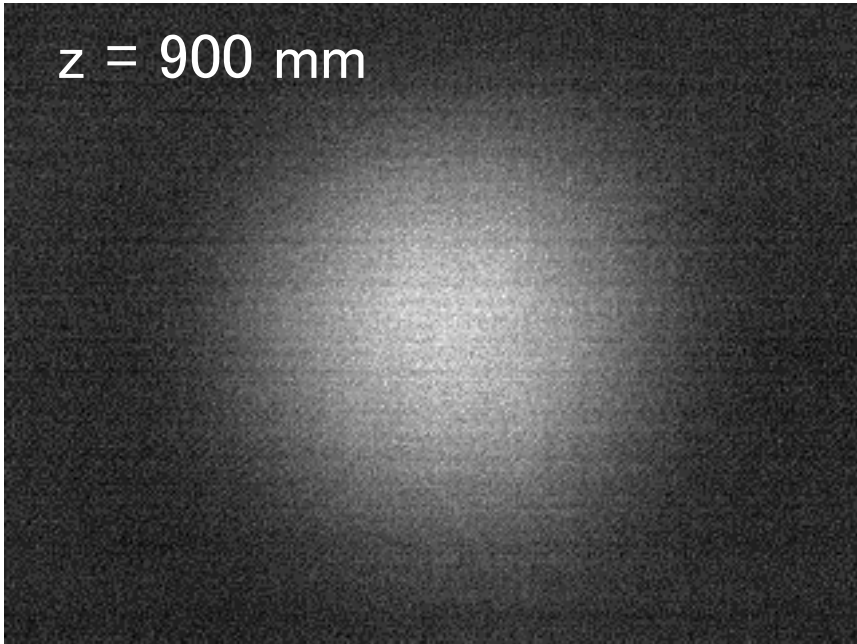
$z = 700$ mm



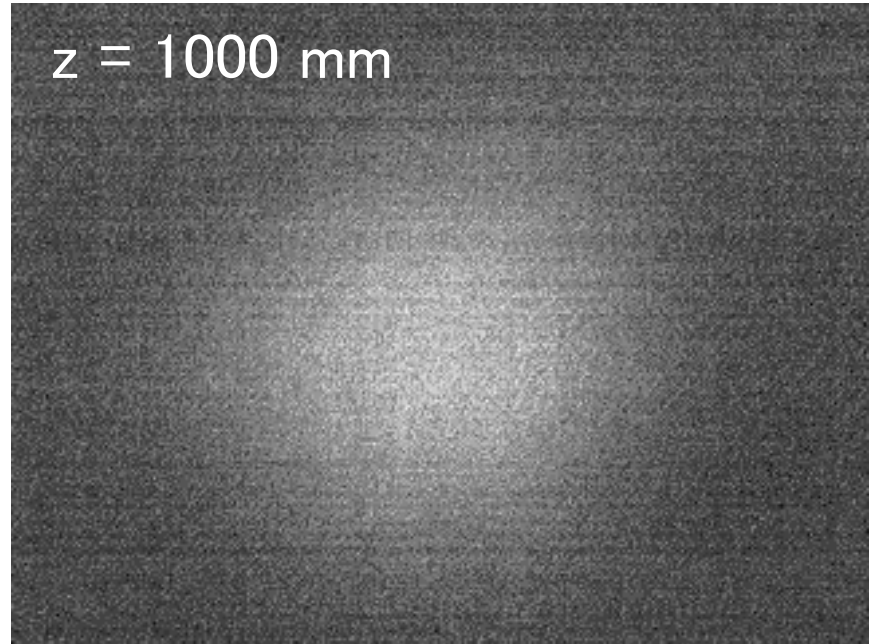
$z = 750$ mm



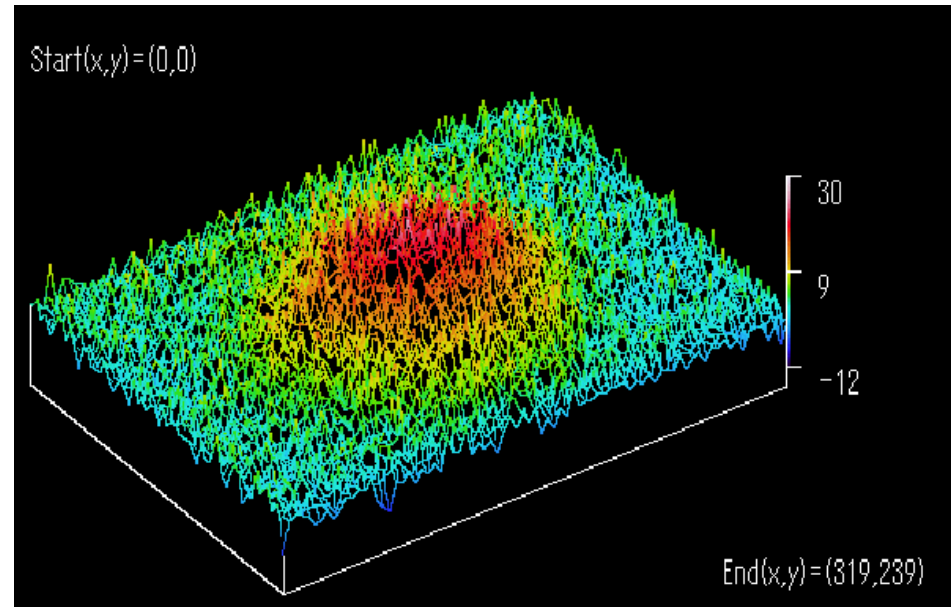
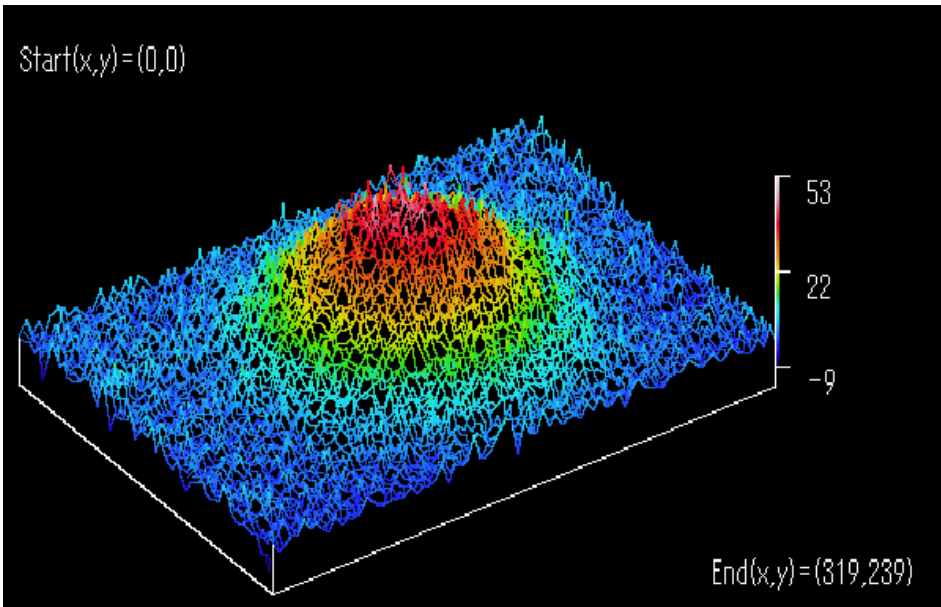
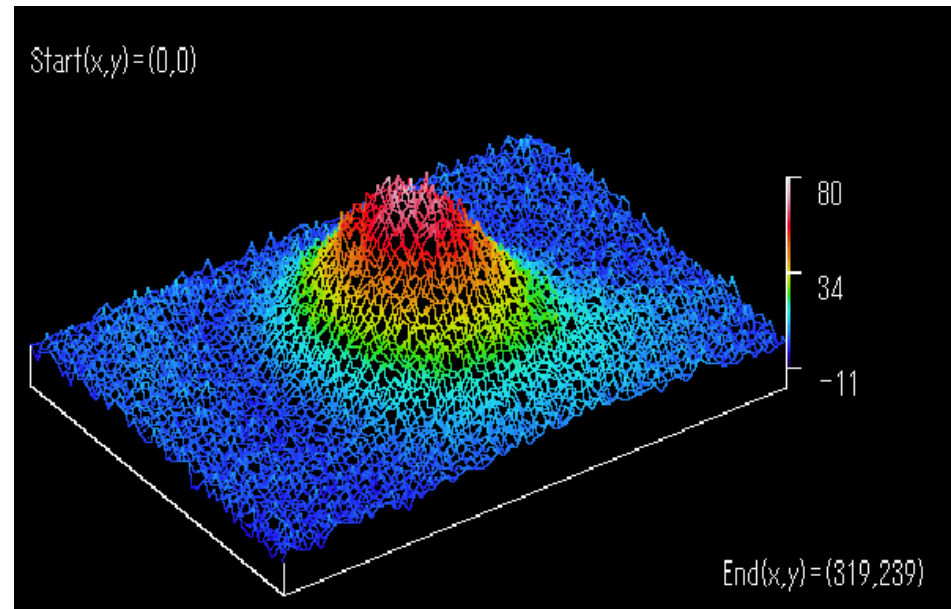
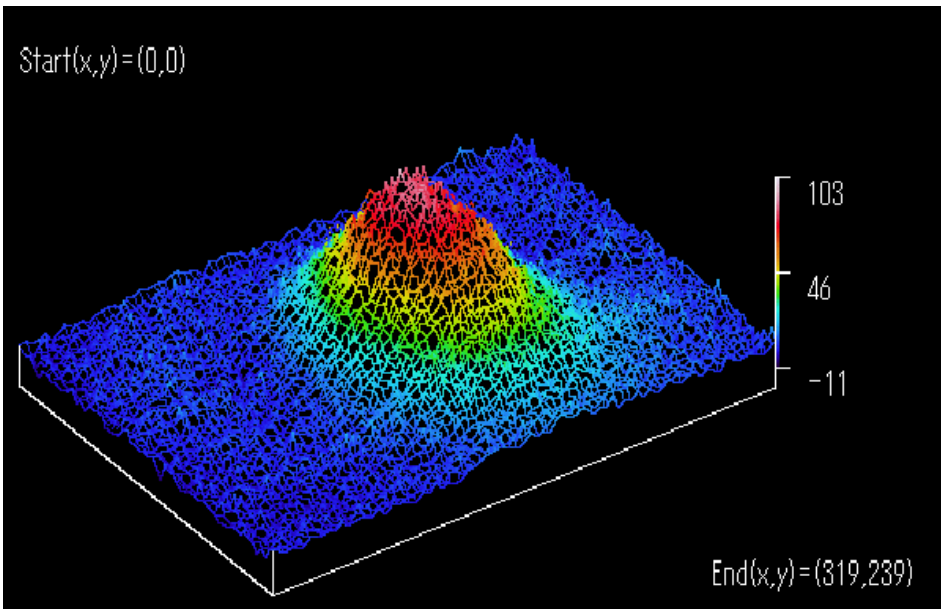
$z = 900$ mm



$z = 1000$ mm



3Dプロファイル



まとめ

- 積算回数を増やすことでノイズを取り除ける
- ロックイン機能を用いると積算がより効果的になる
- ホログラムのノイズを除去することで再構成画像の質が向上した
- 光源に近いとパワーは強いがビームは汚い
- 光源から遠いとビームはきれいだがパワーが弱い