The article "Improved spatial speckle contrast model for tissue blood flow imaging: Effects of spatial correlation among neighboring camera pixels"
in the Journal of Biomedical Optics (JBO) should be cited in any work related to the software .

In[1]:=

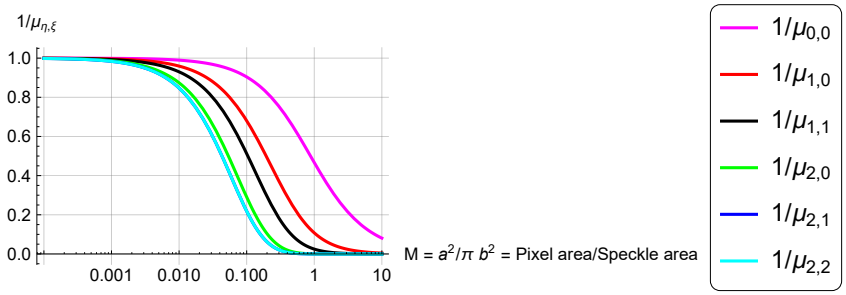
```
MuInvFactor[m_, η_] := (Exp[-π m (η - 1)^2] - 2 Exp[-π m η^2] + Exp[-π m (η + 1)^2] +
    π √m ((η - 1) Erf[√(π m) (η - 1)] - 2 η Erf[√(π m) η] + (η + 1) Erf[√(π m) (η + 1)]))

MuInv[m_, η_, ξ_] := 1/(4 π^2 m^2) MuInvFactor[m, η] * MuInvFactor[m, ξ]
```

In[23]:=

```
(*
%Calculating the correlation factors mu,for the first 6 correlation
%factors
*)
LogLinearPlot[{MuInv[m, 0, 0], MuInv[m, 1, 0], MuInv[m, 1, 1], MuInv[m, 2, 0],
 MuInv[m, 2, 1], MuInv[m, 2, 1]}, {m, 1 * 10^-4, 10}, PlotLegends → LineLegend[
  {"1/μ0,0", "1/μ1,0", "1/μ1,1", "1/μ2,0", "1/μ2,1", "1/μ2,2"}, LegendFunction → Frame],
 PlotStyle → {Magenta, Red, Black, Green, Blue, Cyan}, GridLines → Automatic,
 AxesLabel → {"M = a^2/π b^2 = Pixel area/Speckle area", "1/μη,ξ"}]
```

Out[23]=



In[5]:=

```
(*
%contraste espacial
% 2p+1≤sqrt(N)
                valor numérico
% M=area pixel/area speckle
*)
Ks[m_, n_, p_] :=
 Module[{lateral, diagonal, knight, eta, xi, correccion, central, RETURN},
 módulo
  lateral = diagonal = knight = 0;
  central = MuInv[m, 0, 0];
  If[n > 1,
  si
   For[eta = 1, eta ≤ p, eta++,
   para cada
    lateral = lateral + (√n - eta) √n MuInv[m, eta, 0];
    diagonal = diagonal + (√n - eta)^2 MuInv[m, eta, eta];
   ]; (*end for p*)
   lateral = 4 * lateral;
   diagonal = 4 * diagonal;

   For[xi = 1, xi ≤ (p - 1), xi++,
   para cada
    For[eta = xi + 1, eta ≤ p, eta++,
    para cada
     knight = knight + (√n - eta) (√n - xi) MuInv[m, eta, xi];
    ](*fin del for eta*)
   ]; (*fin del for xi*)
   knight = 8 knight;
   correccion = lateral + diagonal + knight;
               correccion
   correccion = ----------;
                n (n - 1)
   , (*else*)
   correccion = 0;
  ]; (*fin if*)
  RETURN = central - correccion;
  RETURN = √RETURN
 ]
```

In[17]:=
```
(*
%contrast for 1x1,3x3,5x5,7x7 sliding window respectively
*)
LogLinearPlot[{Ks[m, 1^2, 0], Ks[m, 3^2, 1], Ks[m, 5^2, 2]}, {m, 0.01, 10},
 PlotLegends → LineLegend[{"Ks(1,0)", "Ks(3^2,1)", "Ks(5^2,2)"}, LegendFunction → Frame],
 PlotStyle → {Blue, Magenta, Black},
 AxesLabel → {"M = a^2/π b^2 = Pixel area/Speckle area", "Ks(N,p)"}]
```

Out[17]=