

Reto F3001C

Max Eduardo Garcia Esquivel - A01236070.

Waveguide selector:

Selected waveguide:

Size: 1000x325

Mode: 14

Waveguide Summary:

Waveguide: 1000x1000, mode: 15

Fundamental Mode Data (1596nm):

Ranges:

Lambda Ranges: 1.53-1.596

Omega Ranges: 1181049869.7706-1231997119.0548

Neff vs ω/λ

Function $n_{eff}(\lambda)$:

$-0.000025750505326139147430292500 \cdot 1.^{30} + 0.000166135621290843785071572603 \cdot 1.^{29} - 0.000319608704624926799522238730 \cdot 1.^{28} + 0.0004788119111111111111111111111111 \cdot 1.^{27} - 0.0006379218750000000000000000000000 \cdot 1.^{26} + 0.0007969230769230769230769230769231 \cdot 1.^{25} - 0.0009559242789473684210526315789474 \cdot 1.^{24} + 0.0011149254809716592427894736842105 \cdot 1.^{23} - 0.0012739266829959500000000000000000 \cdot 1.^{22} + 0.0014329278850192407407407407407407 \cdot 1.^{21} - 0.0015919290870435314814814814814815 \cdot 1.^{20} + 0.0017509302890678222222222222222222 \cdot 1.^{19} - 0.0019099314910921129629629629629630 \cdot 1.^{18} + 0.0020689326931164037037037037037037 \cdot 1.^{17} - 0.0022279338951406944444444444444444 \cdot 1.^{16} + 0.0023869350971649851851851851851852 \cdot 1.^{15} - 0.0025459362991892759259259259259259 \cdot 1.^{14} + 0.0027049375012135666666666666666667 \cdot 1.^{13} - 0.0028639387032378574074074074074074 \cdot 1.^{12} + 0.0030229399052621481481481481481481 \cdot 1.^{11} - 0.0031819411072864388888888888888889 \cdot 1.^{10} + 0.0033409423093107296296296296296296 \cdot 1.^{9} - 0.0034999435113350203703703703703704 \cdot 1.^{8} + 0.0036589447133593111111111111111111 \cdot 1.^{7} - 0.0038179459153836018518518518518519 \cdot 1.^{6} + 0.0039769471174078925925925925925926 \cdot 1.^{5} - 0.0041359483194321833333333333333333 \cdot 1.^{4} + 0.0042949495214564740740740740740741 \cdot 1.^{3} - 0.0044539507234807648148148148148148 \cdot 1.^{2} + 0.0046129519255050555555555555555556 \cdot 1.^{1} - 0.0047719531275293462962962962962963 \cdot 1.^{0} + 0.0049309543295536370370370370370370 \cdot 1.^{-1} - 0.0050899555315779277777777777777778 \cdot 1.^{-2} + 0.0052489567336022185185185185185185 \cdot 1.^{-3} - 0.0054079579356265092592592592592592 \cdot 1.^{-4} + 0.0055669591376507999999999999999999 \cdot 1.^{-5} - 0.0057259603396750907407407407407407 \cdot 1.^{-6} + 0.0058849615416993814814814814814815 \cdot 1.^{-7} - 0.0060439627437236722222222222222222 \cdot 1.^{-8} + 0.0062029639457479629629629629629630 \cdot 1.^{-9} - 0.0063619651477722537037037037037037 \cdot 1.^{-10} + 0.0065209663497965444444444444444444 \cdot 1.^{-11} - 0.0066799675518208351851851851851852 \cdot 1.^{-12} + 0.0068389687538451259259259259259259 \cdot 1.^{-13} - 0.0069979699558694166666666666666667 \cdot 1.^{-14} + 0.0071569711578937074074074074074074 \cdot 1.^{-15} - 0.0073159723599179981481481481481481 \cdot 1.^{-16} + 0.0074749735619422888888888888888889 \cdot 1.^{-17} - 0.0076339747639665796296296296296296 \cdot 1.^{-18} + 0.0077929759659908703703703703703704 \cdot 1.^{-19} - 0.0079519771680151611111111111111111 \cdot 1.^{-20} + 0.0081109783700394518518518518518519 \cdot 1.^{-21} - 0.0082699795720637425925925925925926 \cdot 1.^{-22} + 0.0084289807740880333333333333333333 \cdot 1.^{-23} - 0.0085879819761123240740740740740741 \cdot 1.^{-24} + 0.0087469831781366148148148148148148 \cdot 1.^{-25} - 0.0089059843801609055555555555555556 \cdot 1.^{-26} + 0.0090649855821851962962962962962963 \cdot 1.^{-27} - 0.0092239867842094870370370370370370 \cdot 1.^{-28} + 0.0093829879862337777777777777777778 \cdot 1.^{-29} - 0.0095419891882580685185185185185185 \cdot 1.^{-30} + 0.0097009903902823592592592592592592 \cdot 1.^{-31} - 0.0098599915923066500000000000000000 \cdot 1.^{-32} + 0.0100189927943309407407407407407407 \cdot 1.^{-33} - 0.0101779939963552314814814814814815 \cdot 1.^{-34} + 0.0103369951983795222222222222222222 \cdot 1.^{-35} - 0.0104959964004038129629629629629630 \cdot 1.^{-36} + 0.0106549976024281037037037037037037 \cdot 1.^{-37} - 0.0108139988044523944444444444444444 \cdot 1.^{-38} + 0.0109729999999999999999999999999999 \cdot 1.^{-39} - 0.0111319999999999999999999999999999 \cdot 1.^{-40} + 0.0112909999999999999999999999999999 \cdot 1.^{-41} - 0.0114499999999999999999999999999999 \cdot 1.^{-42} + 0.0116089999999999999999999999999999 \cdot 1.^{-43} - 0.0117679999999999999999999999999999 \cdot 1.^{-44} + 0.0119269999999999999999999999999999 \cdot 1.^{-45} - 0.0120859999999999999999999999999999 \cdot 1.^{-46} + 0.0122449999999999999999999999999999 \cdot 1.^{-47} - 0.0124039999999999999999999999999999 \cdot 1.^{-48} + 0.0125629999999999999999999999999999 \cdot 1.^{-49} - 0.0127219999999999999999999999999999 \cdot 1.^{-50} + 0.0128809999999999999999999999999999 \cdot 1.^{-51} - 0.0130399999999999999999999999999999 \cdot 1.^{-52} + 0.0131989999999999999999999999999999 \cdot 1.^{-53} - 0.0133579999999999999999999999999999 \cdot 1.^{-54} + 0.0135169999999999999999999999999999 \cdot 1.^{-55} - 0.0136759999999999999999999999999999 \cdot 1.^{-56} + 0.0138349999999999999999999999999999 \cdot 1.^{-57} - 0.0139939999999999999999999999999999 \cdot 1.^{-58} + 0.0141529999999999999999999999999999 \cdot 1.^{-59} - 0.0143119999999999999999999999999999 \cdot 1.^{-60} + 0.0144709999999999999999999999999999 \cdot 1.^{-61} - 0.0146299999999999999999999999999999 \cdot 1.^{-62} + 0.0147889999999999999999999999999999 \cdot 1.^{-63} - 0.0149479999999999999999999999999999 \cdot 1.^{-64} + 0.0151069999999999999999999999999999 \cdot 1.^{-65} - 0.0152659999999999999999999999999999 \cdot 1.^{-66} + 0.0154249999999999999999999999999999 \cdot 1.^{-67} - 0.0155839999999999999999999999999999 \cdot 1.^{-68} + 0.0157429999999999999999999999999999 \cdot 1.^{-69} - 0.0159019999999999999999999999999999 \cdot 1.^{-70} + 0.0160609999999999999999999999999999 \cdot 1.^{-71} - 0.0162199999999999999999999999999999 \cdot 1.^{-72} + 0.0163789999999999999999999999999999 \cdot 1.^{-73} - 0.0165379999999999999999999999999999 \cdot 1.^{-74} + 0.0166969999999999999999999999999999 \cdot 1.^{-75} - 0.0168559999999999999999999999999999 \cdot 1.^{-76} + 0.0170149999999999999999999999999999 \cdot 1.^{-77} - 0.0171739999999999999999999999999999 \cdot 1.^{-78} + 0.0173329999999999999999999999999999 \cdot 1.^{-79} - 0.0174919999999999999999999999999999 \cdot 1.^{-80} + 0.0176509999999999999999999999999999 \cdot 1.^{-81} - 0.0178099999999999999999999999999999 \cdot 1.^{-82} + 0.0179689999999999999999999999999999 \cdot 1.^{-83} - 0.0181279999999999999999999999999999 \cdot 1.^{-84} + 0.0182869999999999999999999999999999 \cdot 1.^{-85} - 0.0184459999999999999999999999999999 \cdot 1.^{-86} + 0.0186049999999999999999999999999999 \cdot 1.^{-87} - 0.0187639999999999999999999999999999 \cdot 1.^{-88} + 0.0189229999999999999999999999999999 \cdot 1.^{-89} - 0.0190819999999999999999999999999999 \cdot 1.^{-90} + 0.0192409999999999999999999999999999 \cdot 1.^{-91} - 0.0193999999999999999999999999999999 \cdot 1.^{-92} + 0.0195589999999999999999999999999999 \cdot 1.^{-93} - 0.0197179999999999999999999999999999 \cdot 1.^{-94} + 0.0198769999999999999999999999999999 \cdot 1.^{-95} - 0.0200359999999999999999999999999999 \cdot 1.^{-96} + 0.0201949999999999999999999999999999 \cdot 1.^{-97} - 0.0203539999999999999999999999999999 \cdot 1.^{-98} + 0.0205129999999999999999999999999999 \cdot 1.^{-99} - 0.0206719999999999999999999999999999 \cdot 1.^{-100} + 0.0208309999999999999999999999999999 \cdot 1.^{-101} - 0.0209899999999999999999999999999999 \cdot 1.^{-102} + 0.0211489999999999999999999999999999 \cdot 1.^{-103} - 0.0213079999999999999999999999999999 \cdot 1.^{-104} + 0.0214669999999999999999999999999999 \cdot 1.^{-105} - 0.0216259999999999999999999999999999 \cdot 1.^{-106} + 0.0217849999999999999999999999999999 \cdot 1.^{-107} - 0.0219439999999999999999999999999999 \cdot 1.^{-108} + 0.0221029999999999999999999999999999 \cdot 1.^{-109} - 0.0222619999999999999999999999999999 \cdot 1.^{-110} + 0.0224209999999999999999999999999999 \cdot 1.^{-111} - 0.0225799999999999999999999999999999 \cdot 1.^{-112} + 0.0227389999999999999999999999999999 \cdot 1.^{-113} - 0.0228979999999999999999999999999999 \cdot 1.^{-114} + 0.0230569999999999999999999999999999 \cdot 1.^{-115} - 0.0232159999999999999999999999999999 \cdot 1.^{-116} + 0.0233749999999999999999999999999999 \cdot 1.^{-117} - 0.0235339999999999999999999999999999 \cdot 1.^{-118} + 0.0236929999999999999999999999999999 \cdot 1.^{-119} - 0.0238519999999999999999999999999999 \cdot 1.^{-120} + 0.0240109999999999999999999999999999 \cdot 1.^{-121} - 0.0241699999999999999999999999999999 \cdot 1.^{-122} + 0.0243289999999999999999999999999999 \cdot 1.^{-123} - 0.0244879999999999999999999999999999 \cdot 1.^{-124} + 0.0246469999999999999999999999999999 \cdot 1.^{-125} - 0.0248059999999999999999999999999999 \cdot 1.^{-126} + 0.0249649999999999999999999999999999 \cdot 1.^{-127} - 0.0251239999999999999999999999999999 \cdot 1.^{-128} + 0.0252829999999999999999999999999999 \cdot 1.^{-129} - 0.0254419999999999999999999999999999 \cdot 1.^{-130} + 0.0256009999999999999999999999999999 \cdot 1.^{-131} - 0.0257599999999999999999999999999999 \cdot 1.^{-132} + 0.0259189999999999999999999999999999 \cdot 1.^{-133} - 0.0260779999999999999999999999999999 \cdot 1.^{-134} + 0.0262369999999999999999999999999999 \cdot 1.^{-135} - 0.0263959999999999999999999999999999 \cdot 1.^{-136} + 0.0265549999999999999999999999999999 \cdot 1.^{-137} - 0.0267139999999999999999999999999999 \cdot 1.^{-138} + 0.0268729999999999999999999999999999 \cdot 1.^{-139} - 0.0270319999999999999999999999999999 \cdot 1.^{-140} + 0.0271909999999999999999999999999999 \cdot 1.^{-141} - 0.0273499999999999999999999999999999 \cdot 1.^{-142} + 0.0275089999999999999999999999999999 \cdot 1.^{-143} - 0.0276679999999999999999999999999999 \cdot 1.^{-144} + 0.0278269999999999999999999999999999 \cdot 1.^{-145} - 0.0279859999999999999999999999999999 \cdot 1.^{-146} + 0.0281449999999999999999999999999999 \cdot 1.^{-147} - 0.0283039999999999999999999999999999 \cdot 1.^{-148} + 0.0284629999999999999999999999999999 \cdot 1.^{-149} - 0.0286219999999999999999999999999999 \cdot 1.^{-150} + 0.0287809999999999999999999999999999 \cdot 1.^{-151} - 0.0289399999999999999999999999999999 \cdot 1.^{-152} + 0.0290989999999999999999999999999999 \cdot 1.^{-153} - 0.0292579999999999999999999999999999 \cdot 1.^{-154} + 0.0294169999999999999999999999999999 \cdot 1.^{-155} - 0.0295759999999999999999999999999999 \cdot 1.^{-156} + 0.0297349999999999999999999999999999 \cdot 1.^{-157} - 0.0298939999999999999999999999999999 \cdot 1.^{-158} + 0.0300529999999999999999999999999999 \cdot 1.^{-159} - 0.0302119999999999999999999999999999 \cdot 1.^{-160} + 0.0303709999999999999999999999999999 \cdot 1.^{-161} - 0.0305299999999999999999999999999999 \cdot 1.^{-162} + 0.0306889999999999999999999999999999 \cdot 1.^{-163} - 0.0308479999999999999999999999999999 \cdot 1.^{-164} + 0.0310069999999999999999999999999999 \cdot 1.^{-165} - 0.0311659999999999999999999999999999 \cdot 1.^{-166} + 0.0313249999999999999999999999999999 \cdot 1.^{-167} - 0.0314839999999999999999999999999999 \cdot 1.^{-168} + 0.0316429999999999999999999999999999 \cdot 1.^{-169} - 0.0318019999999999999999999999999999 \cdot 1.^{-170} + 0.0319609999999999999999999999999999 \cdot 1.^{-171} - 0.0321199999999999999999999999999999 \cdot 1.^{-172} + 0.0322789999999999999999999999999999 \cdot 1.^{-173} - 0.0324379999999999999999999999999999 \cdot 1.^{-174} + 0.0325969999999999999999999999999999 \cdot 1.^{-175} - 0.0327559999999999999999999999999999 \cdot 1.^{-176} + 0.0329149999999999999999999999999999 \cdot 1.^{-177} - 0.0330739999999999999999999999999999 \cdot 1.^{-178} + 0.0332329999999999999999999999999999 \cdot 1.^{-179} - 0.0333919999999999999999999999999999 \cdot 1.^{-180} + 0.0335509999999999999999999999999999 \cdot 1.^{-181} - 0.0337099999999999999999999999999999 \cdot 1.^{-182} + 0.0338689999999999999999999999999999 \cdot 1.^{-183} - 0.0340279999999999999999999999999999 \cdot 1.^{-184} + 0.0341869999999999999999999999999999 \cdot 1.^{-185} - 0.0343459999999999999999999999999999 \cdot 1.^{-186} + 0.0345049999999999999999999999999999 \cdot 1.^{-187} - 0.0346639999999999999999999999999999 \cdot 1.^{-188} + 0.0348229999999999999999999999999999 \cdot 1.^{-189} - 0.0349819999999999999999999999999999 \cdot 1.^{-190} + 0.0351409999999999999999999999999999 \cdot 1.^{-191} - 0.0352999999999999999999999999999999 \cdot 1.^{-192} + 0.0354589999999999999999999999999999 \cdot 1.^{-193} - 0.0356179999999999999999999999999999 \cdot 1.^{-194} + 0.0357769999999999999999999999999999 \cdot 1.^{-195} - 0.0359359999999999999999999999999999 \cdot 1.^{-196} + 0.0360949999999999999999999999999999 \cdot 1.^{-197} - 0.0362539999999999999999999999999999 \cdot 1.^{-198} + 0.0364129999999999999999999999999999 \cdot 1.^{-199} - 0.0365719999999999999999999999999999 \cdot 1.^{-200} + 0.0367309999999999999999999999999999 \cdot 1.^{-201} - 0.0368899999999999999999999999999999 \cdot 1.^{-202} + 0.0370489999999999999999999999999999 \cdot 1.^{-203} - 0.0372079999999999999999999999999999 \cdot 1.^{-204} + 0.0373669999999999999999999999999999 \cdot 1.^{-205} - 0.0375259999999999999999999999999999 \cdot 1.^{-206} + 0.0376849999999999999999999999999999 \cdot 1.^{-207} - 0.0378439999999999999999999999999999 \cdot 1.^{-208} + 0.0380029999999999999999999999999999 \cdot 1.^{-209} - 0.0381619999999999999999999999999999 \cdot 1.^{-210} + 0.0383209999999999999999999999999999 \cdot 1.^{-211} - 0.0384799999999999999999999999999999 \cdot 1.^{-212} + 0.0386389999999999999999999999999999 \cdot 1.^{-213} - 0.0387979999999999999999999999999999 \cdot 1.^{-214} + 0.0389569999999999999999999999999999 \cdot 1.^{-215} - 0.0391159999999999999999999999999999 \cdot 1.^{-216} + 0.0392749999999999999999999999999999 \cdot 1$

Subfunctions (k, dw, Vg, d2w, D)

Function $k(\omega)$:

$$w \cdot (1.257200516898534797702455388523e-271 \cdot w.^{30} - 5.939522598070244281054868243553e-262 \cdot w.^{29} + 8.172780059356416581688$$

Function $dk(\omega)/d\omega$:

$$(1.257200516898534797702455388523e-271 * w.^{30} (31) - 5.939522598070244281054868243553e-262 * w.^{29} (30) + 8.17278005935641$$

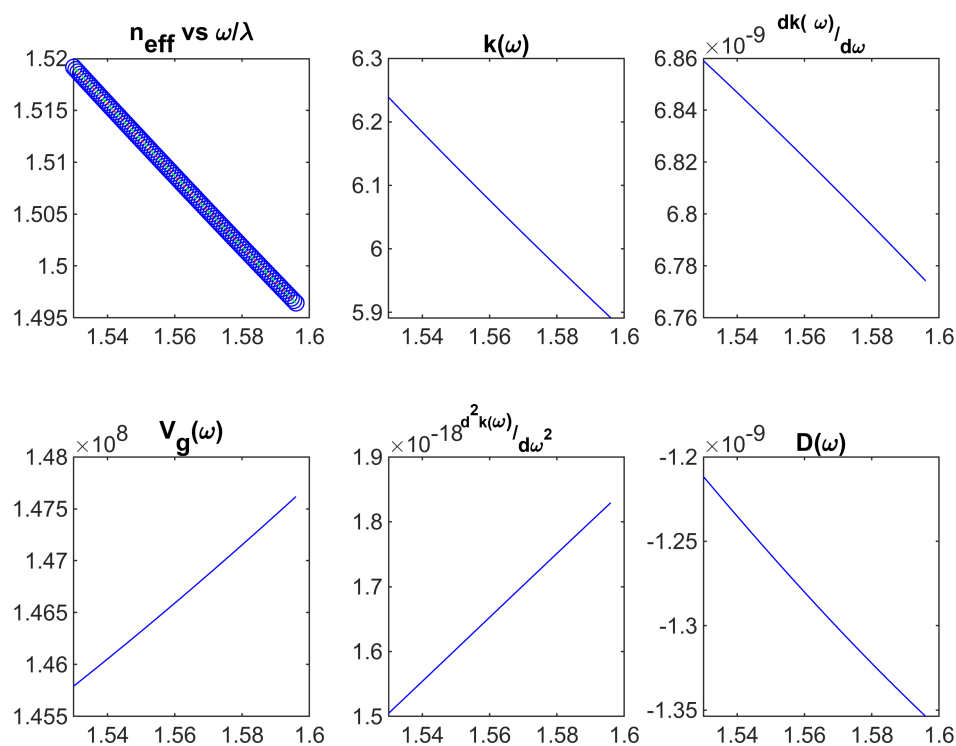
Function $V_g(\omega)$:

$$(3 \times 10^8) ./ (1.257200516898534797702455388523e-271 * w.^{30} (31) - 5.939522598070244281054868243553e-262 * w.^{29} (30) + 8.1727$$

Function $d^2k(\omega)/d\omega$:

$$(1.257200516898534797702455388523e-271 * w.^{29} * (930) - 5.939522598070244281054868243553e-262 * w.^{28} * (870) + 8.172780059356$$

Function $D(\omega)$:

$$-(w.^2/(2\pi*3*10^8)).*((1.257200516898534797702455388523e-271*w.^{29*(930)}-5.939522598070244281054868243553e-262*w.^{29*(930)}))$$


Superior Mode Data (530nm):

Ranges:

Lambda Ranges: 0.51-0.532

Omega Ranges: 3543149609.3118-3695991357.1645

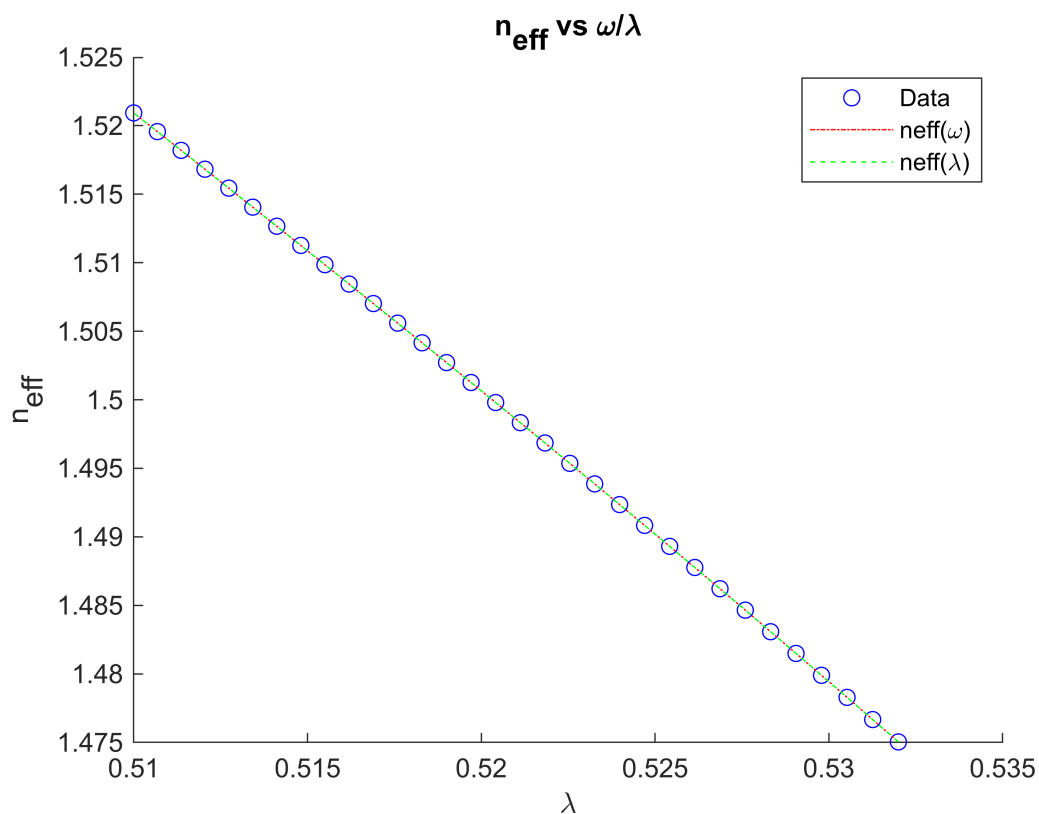
Neff vs ω/λ

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Function neff( $\lambda$ ):
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$-170857623001945.43750000000000000000000000000000 * 1.^{30} + 544734642199373.43750000000000000000000000000000 * 1.^{29} - 66548665.$

Function $\text{neff}(w)$:

4.393310814495142809142406236547e-282*w.^30-2.360636067323359288727349250688e-272*w.^29-8.3682097377615896009782938



Subfunctions (k, dw, Vg, d2w, D)

Function $k(\omega)$:

$$w \cdot (4.393310814495142809142406236547e-282 \cdot w.^{30} - 2.360636067323359288727349250688e-272 \cdot w.^{29} - 8.368209737761589600978 \cdot$$

Function $dk(\omega)/d\omega$:

$$(4.393310814495142809142406236547e-282 * w.^{30} (31) - 2.360636067323359288727349250688e-272 * w.^{29} (30) - 8.36820973776158e-262 * w.^{28} (29) - 2.2222222222222222222222222222222e-252 * w.^{27} (28) - 5.5555555555555555555555555555555e-242 * w.^{26} (27) - 1.1111111111111111111111111111111e-232 * w.^{25} (26) - 2.2222222222222222222222222222222e-222 * w.^{24} (25) - 4.4444444444444444444444444444444e-212 * w.^{23} (24) - 8.8888888888888888888888888888889e-202 * w.^{22} (23) - 1.7777777777777777777777777777778e-192 * w.^{21} (22) - 3.5555555555555555555555555555556e-182 * w.^{20} (21) - 7.1111111111111111111111111111111e-172 * w.^{19} (20) - 1.4222222222222222222222222222222e-162 * w.^{18} (19) - 2.8444444444444444444444444444444e-152 * w.^{17} (18) - 5.6888888888888888888888888888889e-142 * w.^{16} (17) - 1.1377777777777777777777777777778e-132 * w.^{15} (16) - 2.2755555555555555555555555555556e-122 * w.^{14} (15) - 4.5511111111111111111111111111111e-112 * w.^{13} (14) - 9.1022222222222222222222222222222e-102 * w.^{12} (13) - 1.8204444444444444444444444444444e-92 * w.^{11} (12) - 3.6408888888888888888888888888889e-82 * w.^{10} (11) - 7.2817777777777777777777777777778e-72 * w.^{9} (10) - 1.4563555555555555555555555555556e-62 * w.^{8} (9) - 2.9127111111111111111111111111111e-52 * w.^{7} (8) - 5.8254222222222222222222222222222e-42 * w.^{6} (7) - 1.1650844444444444444444444444444e-32 * w.^{5} (6) - 2.3301688888888888888888888888889e-22 * w.^{4} (5) - 4.6603377777777777777777777777778e-12 * w.^{3} (4) - 9.3206755555555555555555555555556e-02 * w.^{2} (3) - 1.8641351111111111111111111111111e+00 * w.^{1} (2) - 3.7282702222222222222222222222222e+00 * w.^{0} (1))$$

Function $V_g(\omega)$:

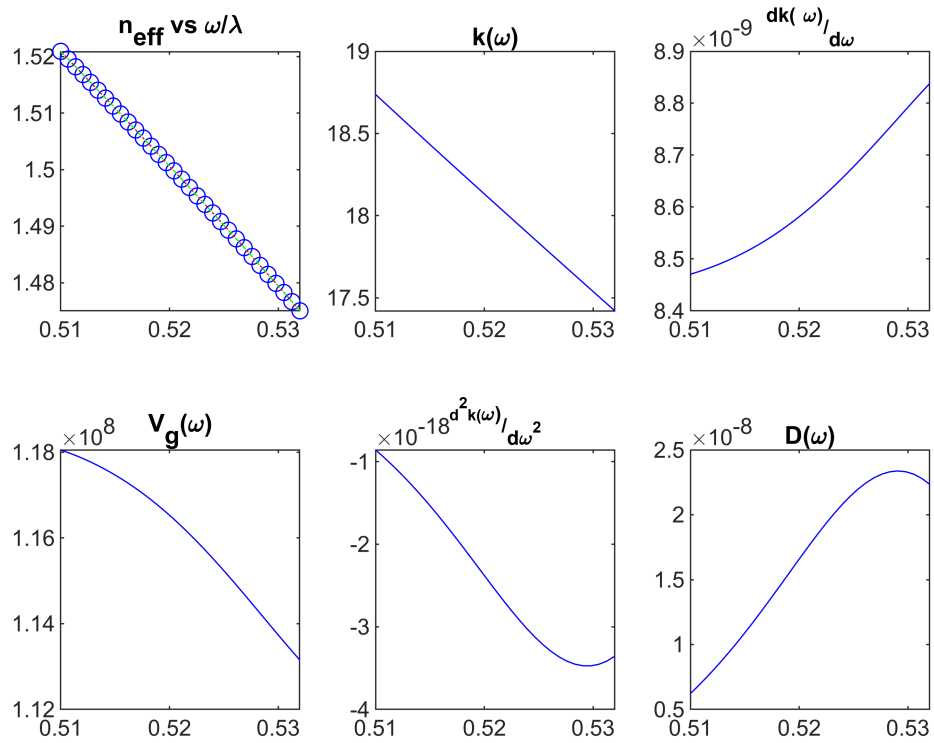
$$(3 \cdot 10^8) ./ (4.393310814495142809142406236547e-282 * w.^{30} (31) - 2.360636067323359288727349250688e-272 * w.^{29} (30) - 8.3682$$

Function $d^2k(\omega)/d\omega^2$:

$$(4.393310814495142809142406236547e-282 * w.^{29} (930) - 2.360636067323359288727349250688e-272 * w.^{28} (870) - 8.368209737761$$

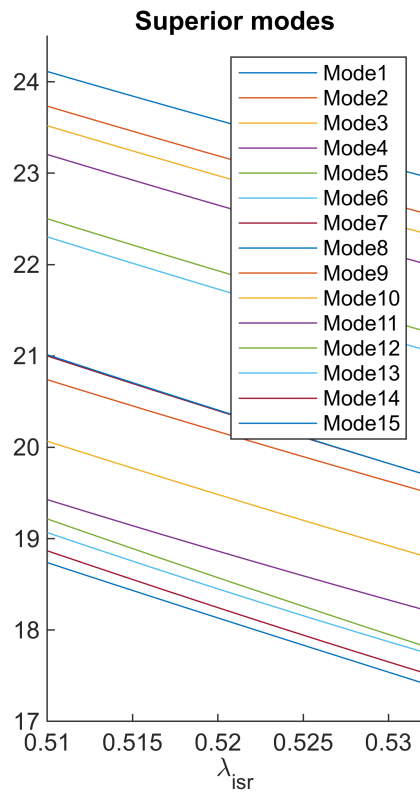
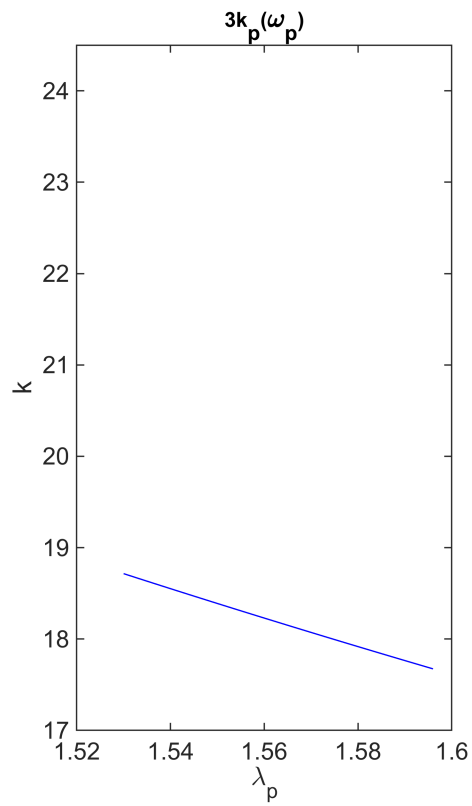
Function $D(\omega)$:

$$-(w.^2/(2*pi*3*10^8)).*((4.393310814495142809142406236547e-282*w.^{29*(930)}-2.360636067323359288727349250688e-272*w.^{29*(930)}))$$



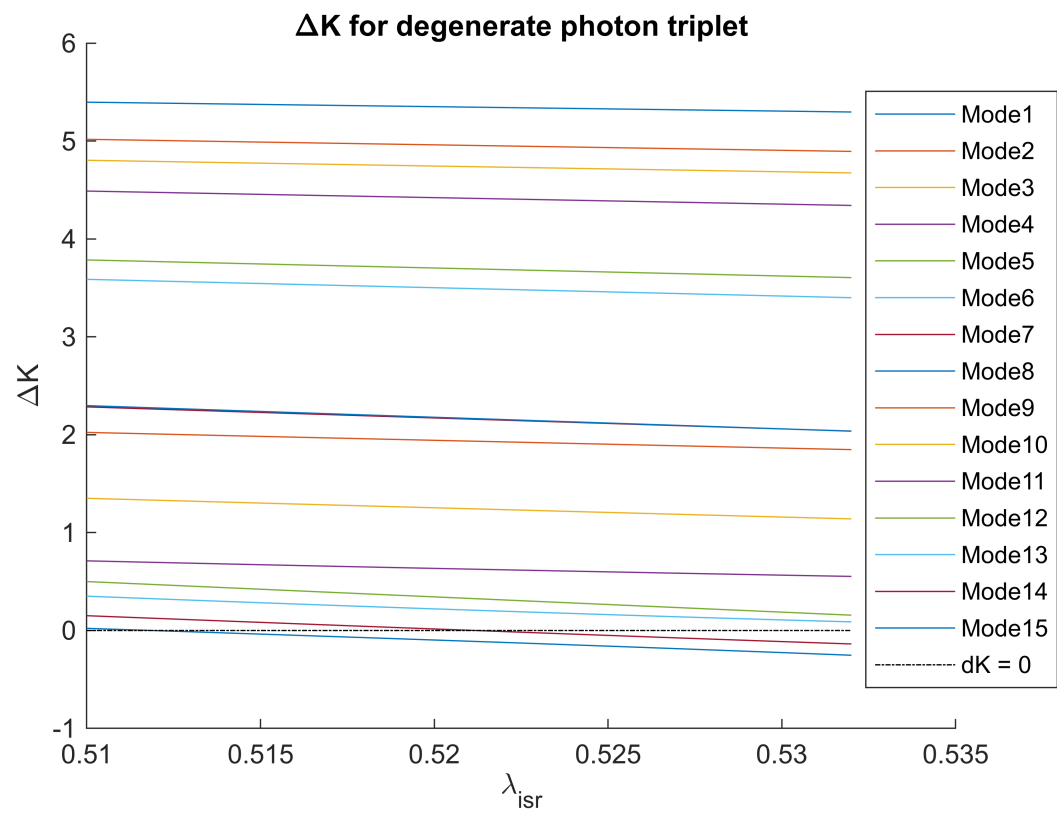
Load Waveguide Simple:

K's comparing



Find degenerate photon that allow momentum and energy conservation

Modos con $dK=0$: Modo 14, Modo 15



Phase Matching

Pump wavelength: 0.51-0.532

Photon wavelength: 1.53-1.596

Waveguide 1000x325 with $\lambda_i = 1.53$

