

Supplementary Information for “Integrated spatial multiplexing of heralded single photon sources”

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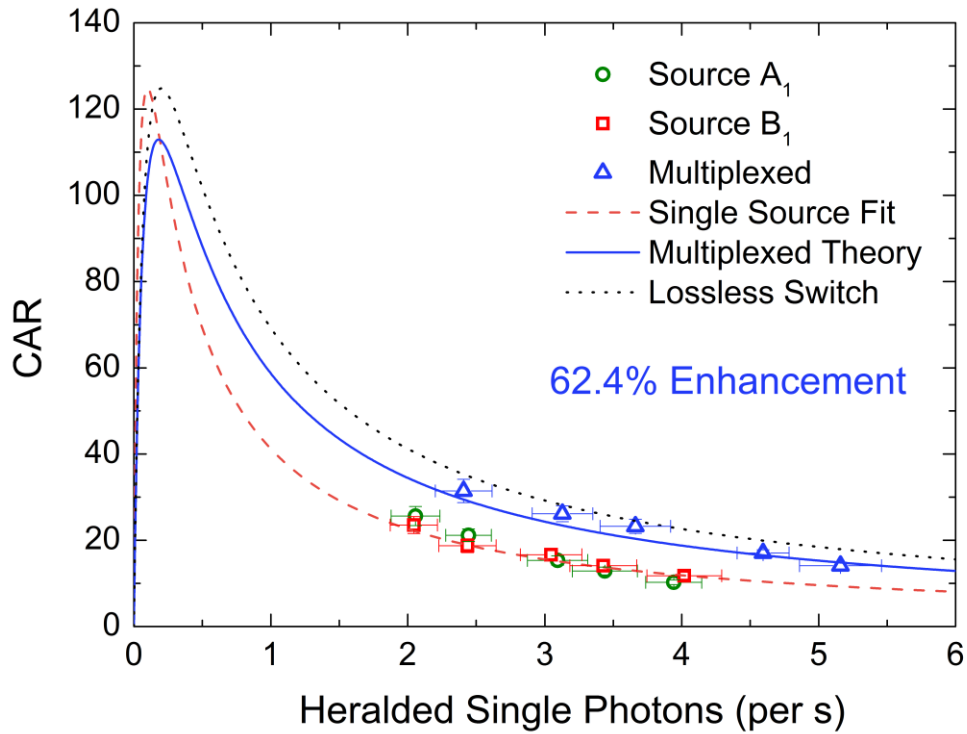
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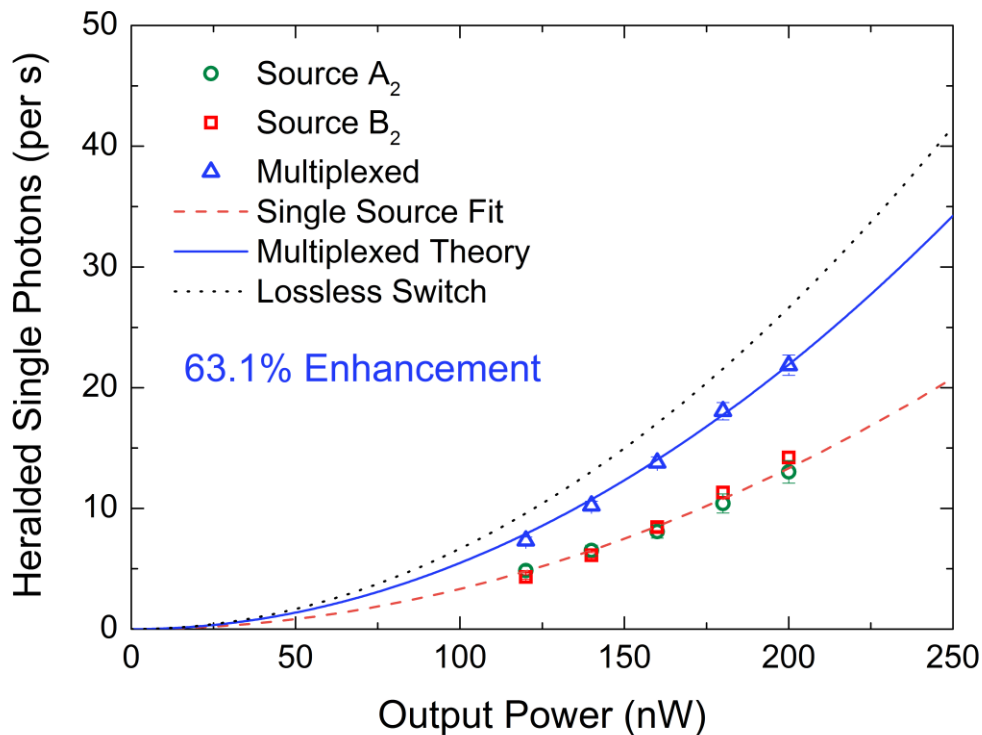
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Supplementary Figure S1 | Plot of the experimental data for the separately pumped PhCW experiment showing CAR versus heralded single photon rate. The single source data is shown as red squares and green circles and fitted with a dashed red line. The multiplexed data is shown as blue triangles, fitted with a solid blue line. The theoretical lossless switch case is shown as a black dotted line. Error bars are derived from Poissonian statistics.



Supplementary Figure S2 | Plot of the experimental data for the Y-split device showing heralded single photon rate versus output power. Again, the single source data is shown as red squares and green circles, fitted with a red dashed line. The multiplexed data is shown as blue triangles fitted with a solid blue line. The theoretical lossless switch case shown as a black dotted line. Error bars are derived from Poissonian statistics.

Waveguide A										
Time/s	C_{raw} total	A total	A total/6	C_{true}	C_{raw}/s	A /s	C /s	Err C /s	CAR	Err CAR
480	2077	1110	185.00	1892.00	4.33	0.39	3.94	0.20	10.23	0.53
360	1334	577	96.17	1237.83	3.71	0.27	3.44	0.24	12.87	0.89
420	1384	509	84.83	1299.17	3.30	0.20	3.09	0.22	15.31	1.09
720	1843	499	83.17	1759.83	2.56	0.12	2.44	0.17	21.16	1.44
600	1282	289	48.17	1233.83	2.14	0.08	2.06	0.18	25.62	2.22
Waveguide B										
Time/s	C_{raw} total	A total	A total/6	C_{true}	C_{raw}/s	A /s	C /s	Err C /s	CAR	Err CAR
600	1279	313	52.17	1226.83	2.13	0.09	2.04	0.17	23.52	1.99
420	1078	328	54.67	1023.33	2.57	0.13	2.44	0.21	18.72	1.60
420	1356	461	76.83	1279.17	3.23	0.18	3.05	0.22	16.65	1.23
360	1321	525	87.50	1233.50	3.67	0.24	3.43	0.24	14.10	1.00
300	1308	615	102.50	1205.50	4.36	0.34	4.02	0.27	11.76	0.80
Multiplexed A + B										
Time/s	C_{raw} total	A total	A total/6	C_{true}	C_{raw}/s	A /s	C /s	Err C /s	CAR	Err CAR
360	1989	790	131.67	1857.33	5.53	0.37	5.16	0.30	14.11	0.82
900	4377	1454	242.33	4134.67	4.86	0.27	4.59	0.19	17.06	0.71
480	1833	454	75.67	1757.33	3.82	0.16	3.66	0.26	23.22	1.63
600	1949	431	71.83	1877.17	3.25	0.12	3.13	0.22	26.13	1.85
600	1491	276	46.00	1445.00	2.49	0.08	2.41	0.21	31.41	2.70

Supplementary Table S1 | Complete data for the multiplexing of two separate sources. Data for Waveguide A, B and the multiplexed case A + B are shown. These include integration times, total counts in the main coincidence peak, counts in 6 accidental peaks, the average accidental peak, the number of true coincidence counts from SFWM (C-A), the raw counts, accidental and true counts per second, the error in the true counts calculated from Poissonian statistics, the CAR and the error in the CAR, again calculated from Poissonian statistics.

$g^{(2)}(nT) = (C_H C_{ABH}) / (C_{AH} C_{BH})$		n				
		-2	-1	0	+1	+2
3-fold Coincidence	C_{ABH}	19	18	46	20	19
Coincidence Delayed	C_{AH}	19475	23096	280840	23213	23281
Coincidence Fixed	C_{BH}	544832	544832	544832	544832	544832
Heralds	C_H	5.78E+08	5.78E+08	5.78E+08	5.78E+08	5.78E+08
$g^{(2)}(nT)$	$g^{(2)}(nT)$	1.13759	0.908752	0.190989	1.004635	0.951616
Error $g^{(2)}(nT)$	Err[$g^{(2)}(nT)$]	0.260981	0.214195	0.02816	0.224643	0.218316

Supplementary Table S2 | Complete data for the correlation function measurement of the multiplexed stream of photons. Data is shown for $g^{(2)}(nT)$ where T is the pulse period of the laser and n is integer number of pulse periods delayed for one detector. To calculate this one requires the three-fold coincidences C_{ABH} from the herald (H) and the detectors after the 50:50 coupler (A and B), the heralded counts after the 50:50 coupler C_{AH} and C_{BH} and the number of heralding clicks C_H . The error is calculated from Poissonian statistics. All data was taken for 7 hours in total.