

A downloadable computer program for generating n -arcs

Anyone who is interested in the listing of inequivalent n -arcs or inequivalent complete n -arcs, not contained here in explicit form, is encouraged to download and run my [demo software for generating \$n\$ -arcs](#).

The limits of applicability of this software are as follows.

$$\begin{array}{ll} \text{Limit for field order } (q) : & 4 \leq q \leq 32. \\ \text{Limit for PG dimension } (r) : & 1 \leq r \leq 7. \\ \text{Limit for the length of arcs } (n) : & r + 3 \leq n \leq q + 2. \end{array}$$

(Naturally, q should be a prime or a prime power.)

Even unsolved cases can be attacked – with care – by this demo program, however, the CPU time and/or the amount of disc usage may be enormously huge for $r \geq 2$ when q and n are large ($q > 19, n > 8$). Therefore, computers with very fast processors and very huge discs are of great advantage. For an average PC, we do not recommend to run this demo program for $q \geq 23$, unless the length of arcs is very small or very large. Anyway, it is advisable to test the downloaded software first with smaller sizes of input data and keep the hard disc under control to avoid that it become full.

At starting the program, it asks for the necessary input. For the first question, type 1 or 2; – for the subsequent questions, the value of q , r and n .

If q is a prime, then the output files

arc- q - r - n .txt
complete- q - r - n .txt

will contain the result, i.e. the listing of all PGL-inequivalent arcs and the listing of PGL-inequivalent complete arcs, respectively, for the specified parameters.

If q is a prime power, then two more output files will be generated, that belong to the PFL-inequivalent arcs (complete arcs). Out of respect for the Italian school of projective geometry, we use Italian words for distinction, so

archo- q - r - n .txt
completo- q - r - n .txt

will contain the listing of all PFL-inequivalent arcs and the listing of PFL-inequivalent complete arcs.

There occur also some work-files among the output files.

Finally, we note that differently from the explicit listings, the generated files contain a row and a column of all 1's and the tables are left in 'portrait' rather than transposed to 'landscape' form when $n < 2r + 2$.

[download software](#)