GenX Fitting

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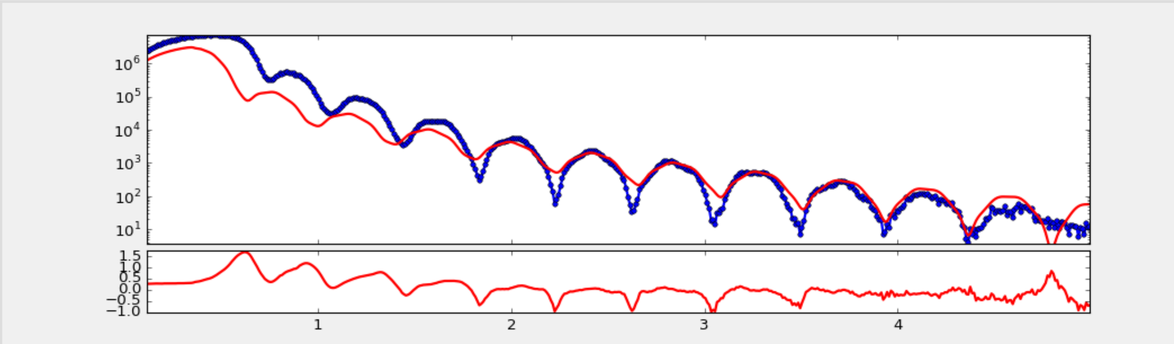
Shows the figure of merit (FOM) as a function of the generations when fitting.




```
# BEGIN Instrument DO NOT CHANGE
from models.utils import create_fp, create_fw
inst = model.Instrument(Ibkg=0.0, res=0.001, footype='gauss beam', I0=10000000.0, samplelen=10.0, probe='x-ray', beamw=
0.075, restype='full conv and varying res.', tthoff=0.0, pol='uu', coords='tth', resintrange=2, wavelength=1.52, respoints
=5, incangle=0.0,)
inst_fp = create_fp(inst.wavelength); inst_fw = create_fw(inst.wavelength)

fp.set_wavelength(inst.wavelength); fw.set_wavelength(inst.wavelength)
# END Instrument

# BEGIN Sample DO NOT CHANGE
Amb = model.Layer(b=0j, d=0.0, f=(1e-20+1e-20j), dens=1.0, sigma=0.0, magn_ang=0.0, xs_ai=0.0, magn=0.0)
Ti_1 = model.Layer(b=bc.Ti*1, d=200, f=fp.Ti*1, dens=4.506*0.602214/47.867, sigma=2, magn_ang=0.0, xs_ai=0.0, magn=0.0)
SiO2_1 = model.Layer(b=bc.Si*1+bc.O*2, d=500, f=fp.Si*1+fp.O*2, dens=2.196*0.602214/60.0843, sigma=0.0, magn_ang=0.0,
xs_ai=0.0, magn=0.0)
Sub = model.Layer(b=bc.Si*1, d=0.0, f=fp.Si*1, dens=2.329*0.602214/28.0855, sigma=2, magn_ang=0.0, xs_ai=0.0, magn=0.0)

surf = model.Stack(Layers=[SiO2_1 , Ti_1], Repetitions = 1)
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For each Bravais-lattice, extinctions rules can be determined. The crystal structure of θ–MnN, which is investigated in the course of this thesis, is a tetragonally distorted variant of the NaCl lattice. Thus, it is built up by two face-centered cubic (fcc) lattices that are shifted towards each other. For an fcc lattice, reflections from lattice planes (hkl) are only observable when all of h, k, and l are equal or all of them are odd numbers [51].

Lithography translates to ‘stone writing’ and originally referred to the art of writing text on
stone. Modern lithographic techniques find a wide variety of uses in the printing process.

Spin electronic (“spintronic”)devices, based on utilizing the spin as well as the charge
of electrons, open up an entirely new class of electronics. Such devices could include non- volatile magnetic memories, re-programmable logic, and quantum computers. One thing hampering the development of spin electronic devices so far is the lack of sufficiently polarized (nearing 100 procent spin polarization) current sources for spin injection into semiconductors. So- called “half-metallic ferromagnets” would circumvent this problem, but true half-metals have proven extremely difficult to realize in practice. However, the phenomenon of spin filtering may also be exploited to create near 100 procent polarization. Here we propose and demonstrate a different approach [I], combining spin filter tunnel barriers [a] and spin- dependent tunneling [3],similar to a device proposed by Worledge et al. [4]. The combination of a non-magnetic electrode with a spin filter tunnel barrier is used to effectively mimic a half- metallic tunneling electrode and achieve nearly 100 procent spin polarization. Using this “artificial half-metal'' bilayer, we additionally use a second magnetic electrode, creating a donmagnetic metal/ferromagnetic insulator/ferromagnetic metal (M-FI-F) device. We utilize EuS as the magneticinsulator,withGdferromagneticandA1nonmagneticelectrodes. The\tunnel current in this case depends on the relative magnetization orientation of the EuS filter and the Gd “analyzer,” in analogy to a half-metallic ferromagnet/insulator/ferromagnet tunnel junction. The spin filtering in this configuration yields a previously unobserved magnetoresistance effect,exceeding loo procent,suggestinga filteringefficiencycloseto 100 procent.The present scheme would also circumvent impedance mismatch problems with semiconducting counter electrodes, and thus potentially allow spin injection from even a non-magnetic metal into a semiconductor.

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https://ieeexplore.ieee.org/document/6949104

The basic element of an MTJ is a sandwich of two ferromagnetic (F) electrodes separated by a thin insulating tunnel barrier[1]. The tunnel current through the barrier depends on the relative orientation of the magnetic moments of the electrodes, giving rise to a TMR, typically defined as (R_{AP}–R_P)/R_P, where R_{AP}

and *R*P are the resistances for anti-parallel (AP) and parallel (P) alignment of the magnetic moments, respectively3,4,5. The magnitude of the TMR is directly related to the spin polarization of the tunnelling electrons6, which itself is determined by the spin dependence of the density of states near the Fermi energy of each of the ferromagnetic electrodes, and the tunnelling matrix elements for these electrons7.

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Another advantage is the low electrical resistivity of sputter deposited TiN (16 μΩ cm) and a surface roughness below 1 nm.[8,9]

https://aip.scitation.org/doi/10.1063/1.4938388

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worth readaing about sesors

https://www.brown.edu/research/labs/xiao/magnetic-tunneling-junctions-summary

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https://www.geeksforgeeks.org/hysteresis-loop-definition-energy-loss-advantages-sample-questions/

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this exchange anisotropy. it is based on the interface coupling between ferro and antiferro layers. the antiferoo can produce a preferred direction of magensation in the ferromagnetic material, which leads to a shift in the hysteresis curve.(Bearbeitet)Original wiederherstellen

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the shifting of the center of hysteresis is referred to as exchange bais.

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https://patents.google.com/patent/US20120068698A1/en

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https://www.derstandard.at/story/2000079856996/spintronics-the-dance-of-