Sinusoid Extraction and Salience Function Design for Predominant Melody Estimation

Supplementary Graphs

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This report contains the graphs referred to in footnote 6 of:

J. Salamon, E. Gómez and J. Bonada, "Sinusoid Extraction and Salience Function Design for Predominant Melody Estimation", *Proc. of the 14th Int. Conference on Digital Audio Effects (DAFx-11)*, Paris, France, September 19-23, 2011.

How to read the graphs

Each graph presents the results obtained for one of the four metrics: Δf_m, RR_m, S_1 and S_3. The graph includes the results of each of the 12 analysis configurations summarised in Table 2 of the paper, reproduced here together with the marker (shape & colour) representing each configuration in the plots that follow:

Table 1: *Analysis Configurations.*

Conf.	Filtering	Spectral Transform	Frequency/Amplitude Correction	Marker
1	none	STFT	none	×
2			Parabolic	○
3			Phase	△
4		MRFFT	none	×
5			Parabolic	○
6			Phase	△
7	Eq. Loudness	STFT	none	×
8			Parabolic	○
9			Phase	△
10		MRFFT	none	×
11			Parabolic	○
12			Phase	△

Two graphs are plotted for each metric: in the first the parameter $\beta = 1$ and in the second $\beta = 2$. Each datapoint in the graph represents one of the 64 possible combinations of the other parameters:

- $\alpha = 1.0$, 0.9, 0.8, 0.6
- $N_h = 4$, 8, 12, 20
- $\gamma = \infty$, 60dB, 40dB, 20dB

The first 16 datapoints represent configurations where $\alpha = 1$, the next 16 where $\alpha = 0.9$ and so on. Within each group of 16, the first 4 have $N_h = 4$, the next 4 have $N_h = 8$ etc. Finally within each group of 4, each dapatpoint has a different γ value from ∞ down to 20dB.

Graphs

There are 8 graphs in total, plotted on the following pages. When examining the graphs recall that Δf_m should be minimised (i.e. lower results are better), whilst RR_m, S_1 and S_3 should be maximised (i.e. higher results are better).

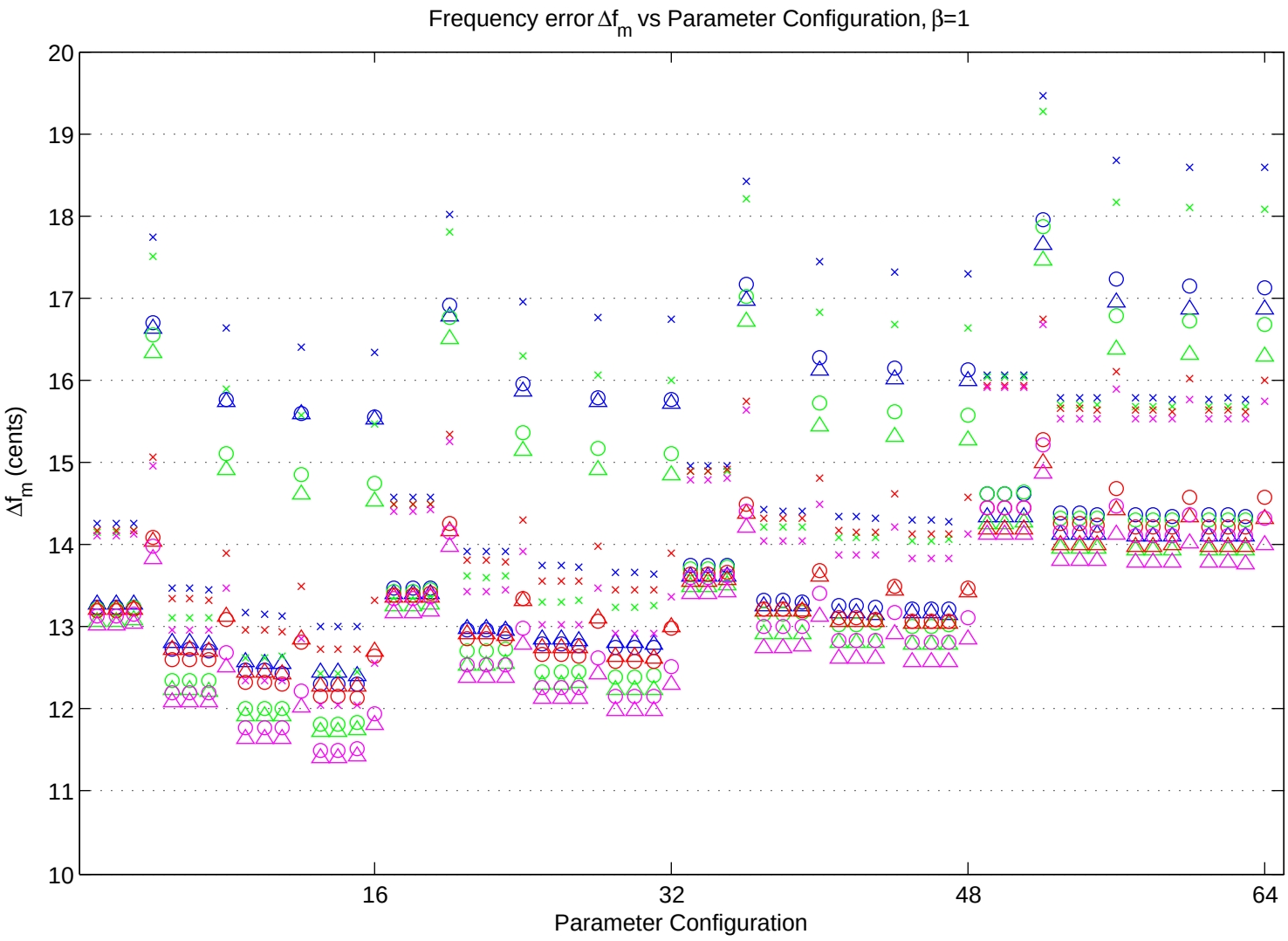

Figure 1: *Salience function design, results for* Δf_m *by parameter configuration when* $\beta = 1$.

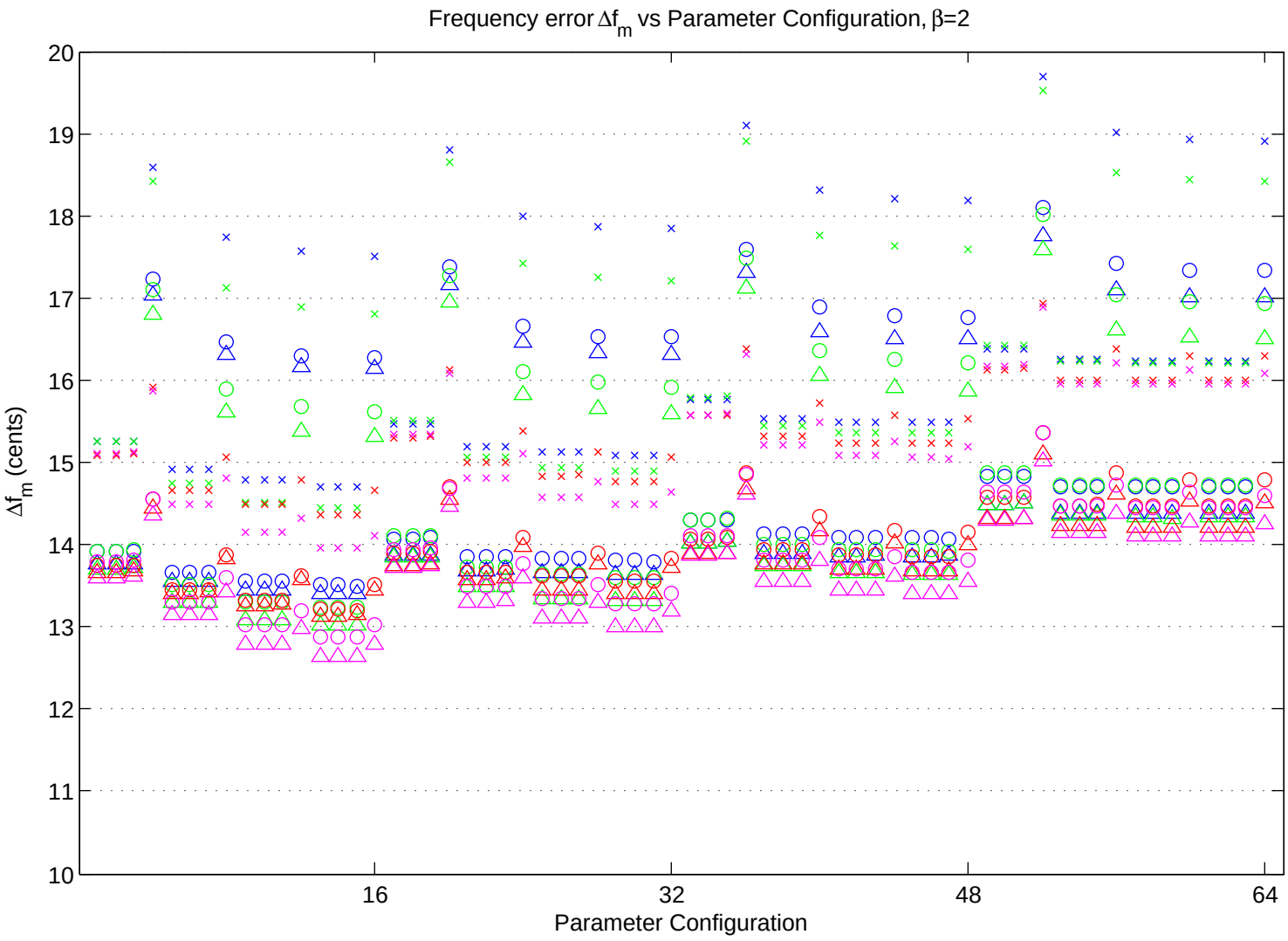

Figure 2: *Salience function design, results for* Δf_m *by parameter configuration when* $\beta = 2$.

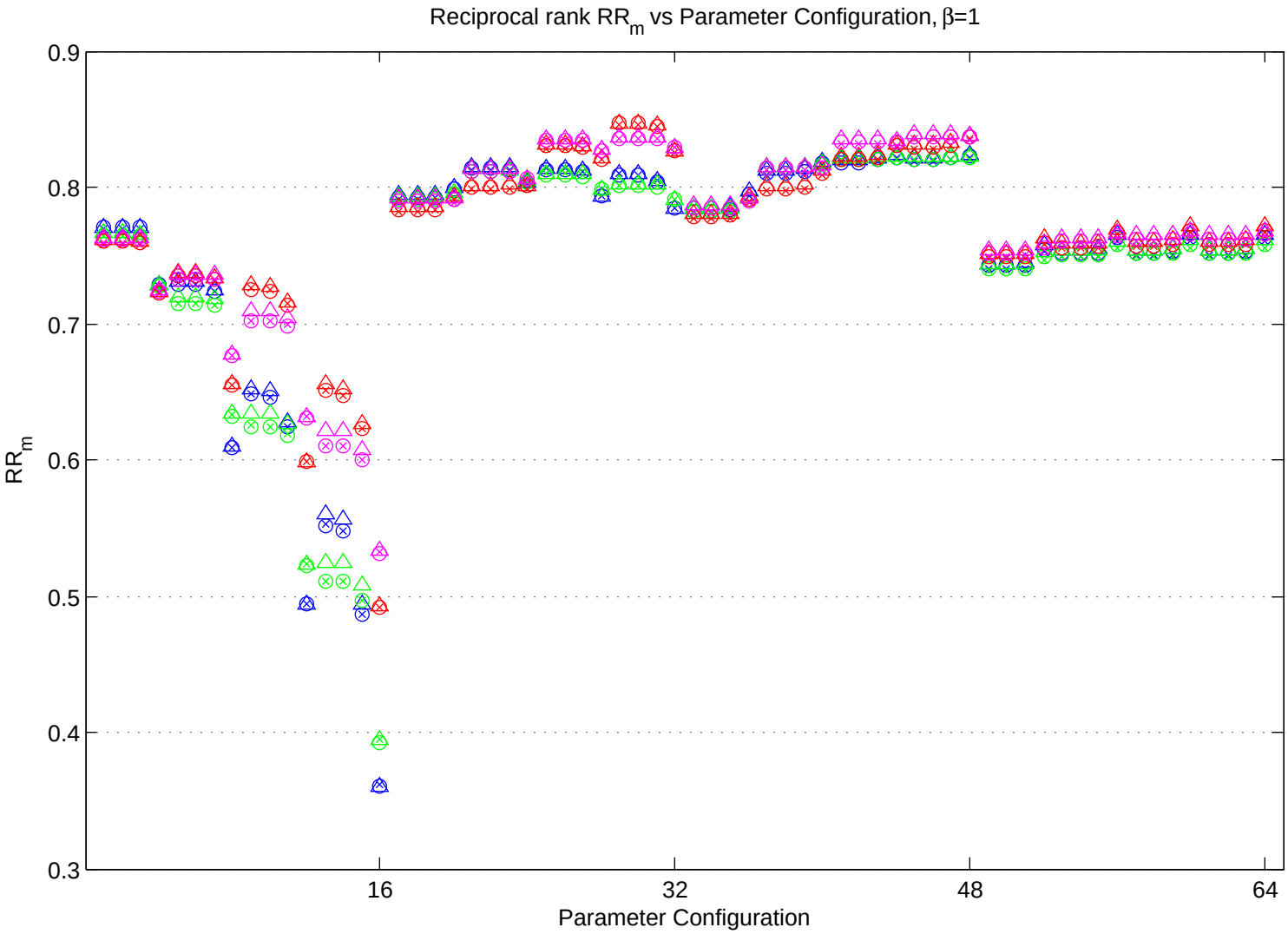

Figure 3: *Salience function design, results for RR_m by parameter configuration when $\beta = 1$.*

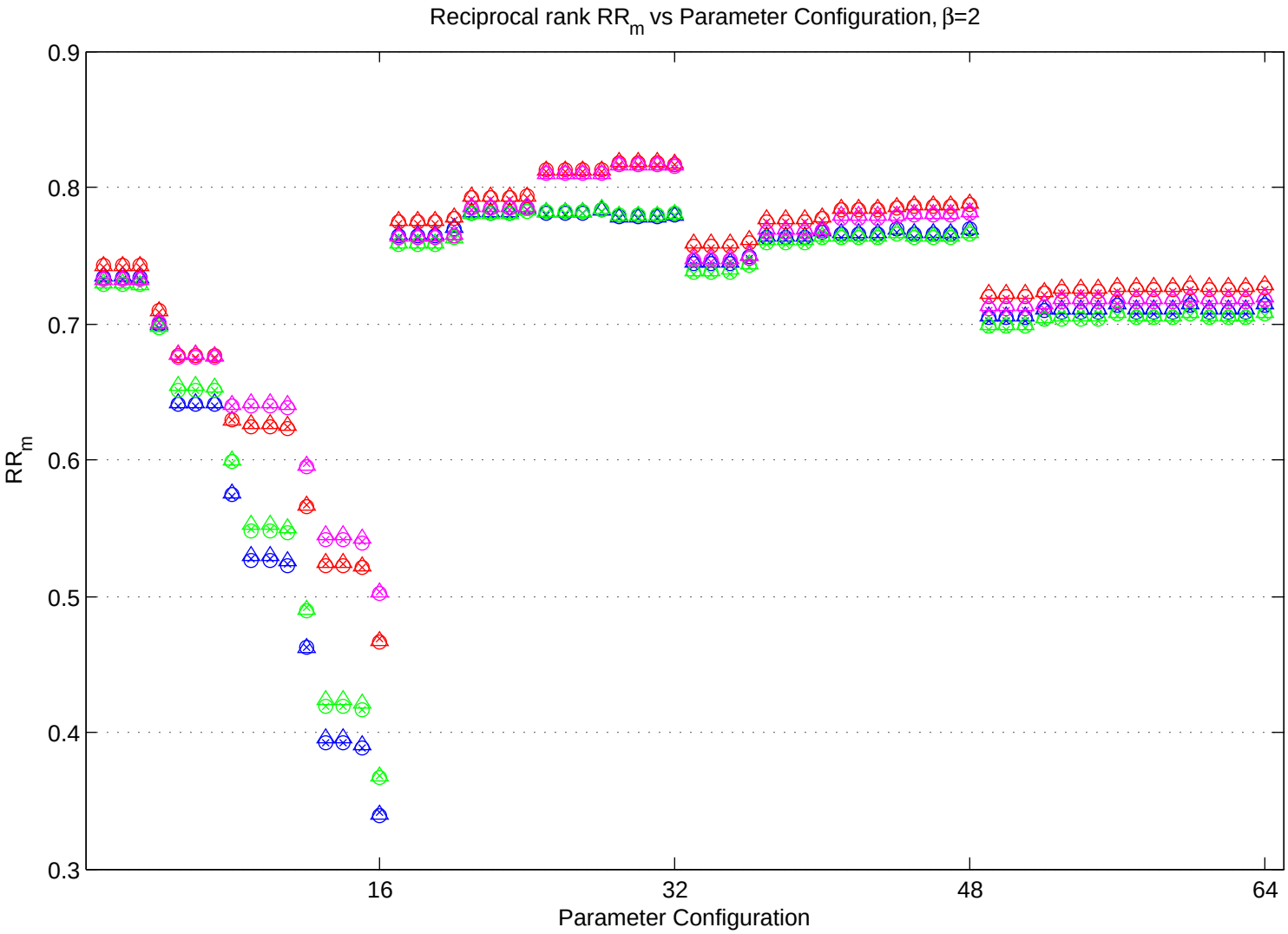

Figure 4: *Salience function design, results for RR_m by parameter configuration when $\beta = 2$.*

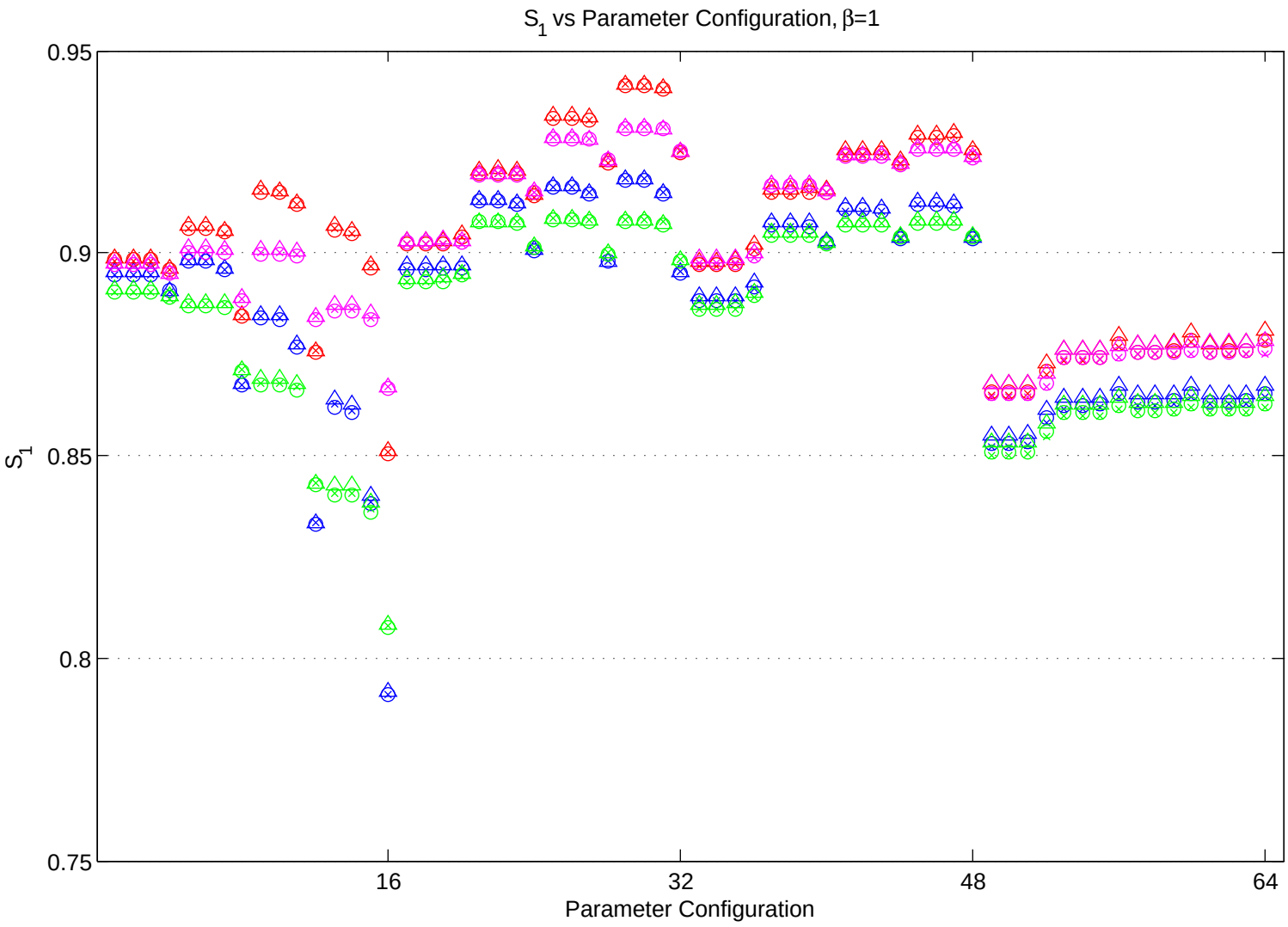

Figure 5: *Salience function design, results for S_1 by parameter configuration when $\beta = 1$.*

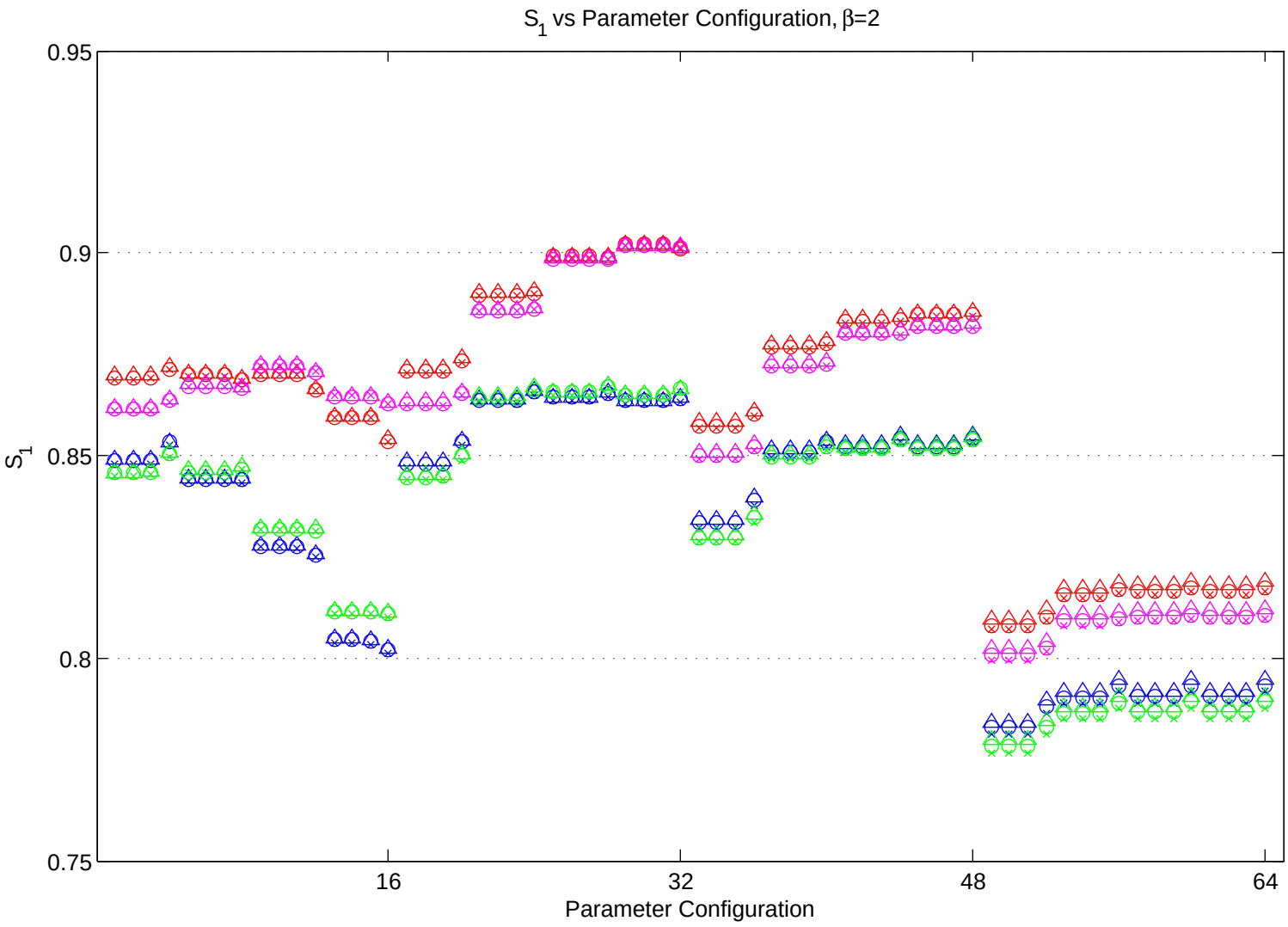

Figure 6: *Salience function design, results for S_1 by parameter configuration when $\beta = 2$.*

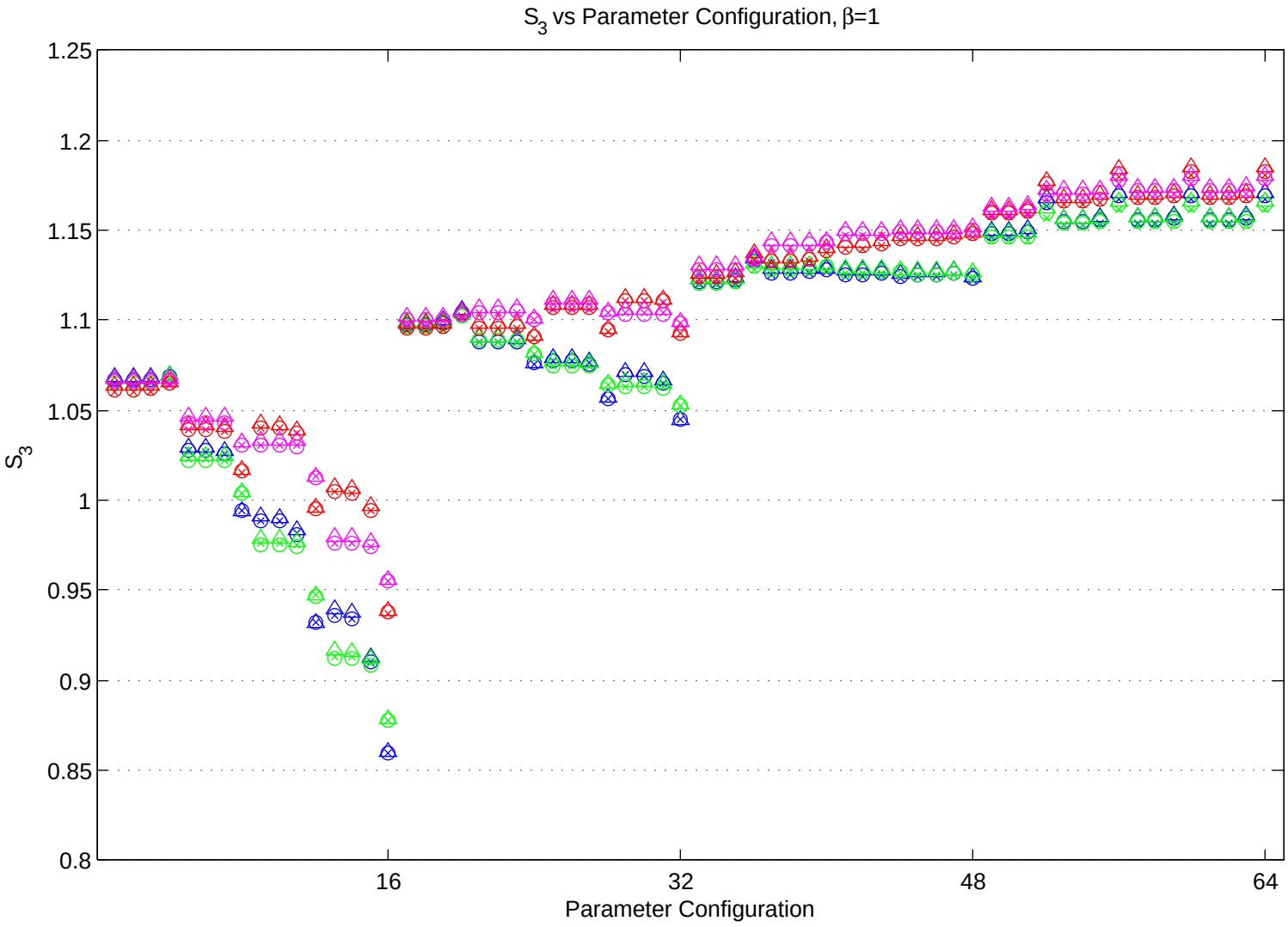

Figure 7: *Salience function design, results for S_3 by parameter configuration when $\beta = 1$.*

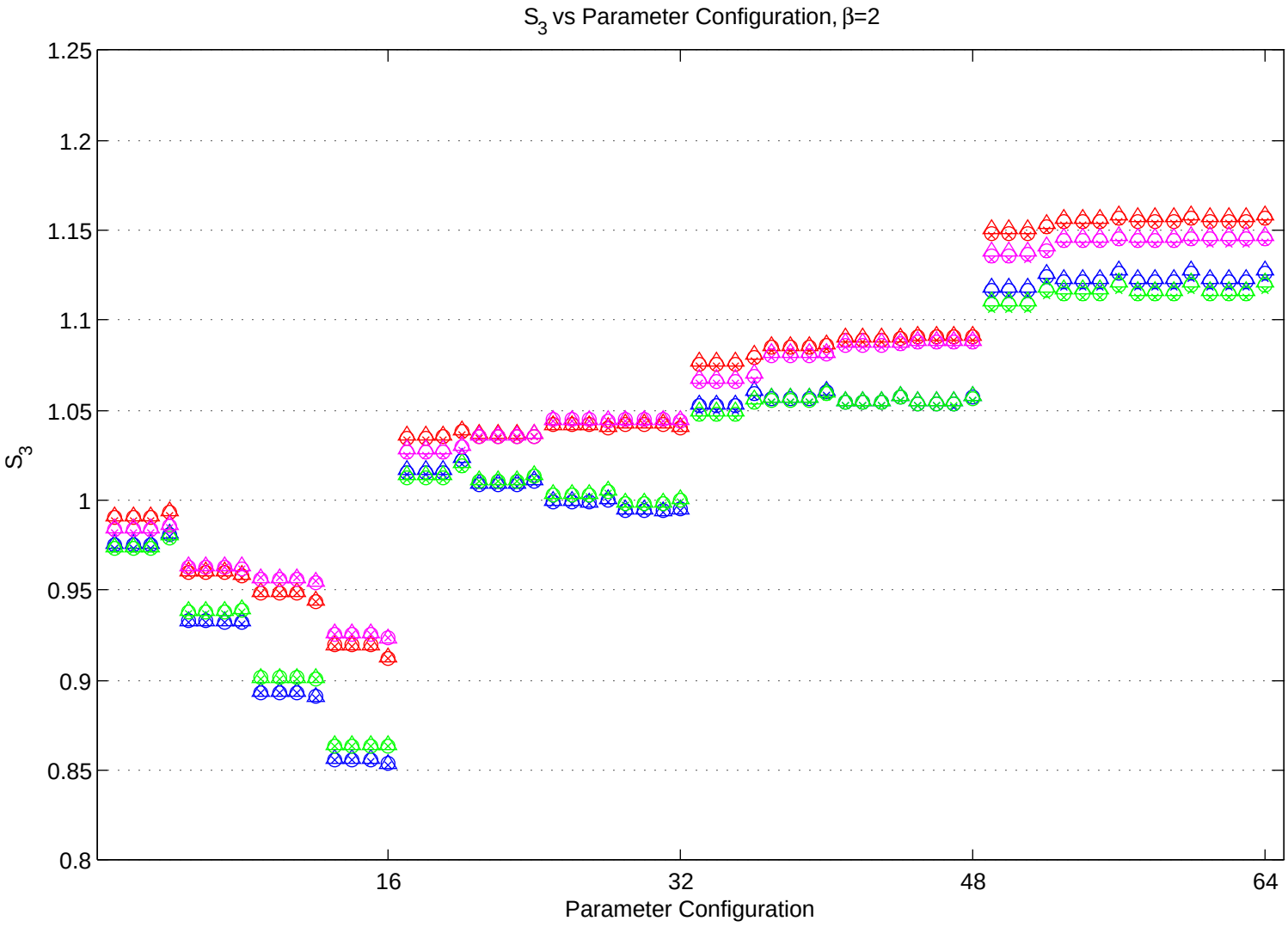

Figure 8: *Salience function design, results for S_3 by parameter configuration when $\beta = 2$.*