

$N(1900) 3/2^+$ $I(J^P) = \frac{1}{2}(3/2^+)$ Status: **** **$N(1900)$ POLE POSITION****REAL PART**

| VALUE (MeV) | DOCUMENT ID | TECN | COMMENT |
|---|------------------------|------|---|
| 1900 to 1940 (\approx 1920) OUR ESTIMATE | | | |
| 1945 \pm 35 | ANISOVICH | 17A | DPWA Multichannel |
| 1928 \pm 18 \pm 2 | ¹ SVARC | 14 | L+P $\pi N \rightarrow \pi N$ |
| ● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ● | | | |
| 1856 | HUNT | 19 | DPWA Multichannel |
| 1912 \pm 30 | ² ANISOVICH | 17A | L+P $\gamma p, \pi^- p \rightarrow K \Lambda$ |
| 1910 \pm 30 | SOKHOYAN | 15A | DPWA Multichannel |
| 1910 \pm 30 | GUTZ | 14 | DPWA Multichannel |
| 1910 | SHKLYAR | 13 | DPWA Multichannel |
| 1900 \pm 30 | ANISOVICH | 12A | DPWA Multichannel |

¹ Fit to the amplitudes of HOEHLER 79.² Statistical error only.**-2xIMAGINARY PART**

| VALUE (MeV) | DOCUMENT ID | TECN | COMMENT |
|---|------------------------|------|---|
| 100 to 200 (\approx 150) OUR ESTIMATE | | | |
| 135 ⁺ ₋ 70 30 | ANISOVICH | 17A | DPWA Multichannel |
| 152 \pm 40 \pm 9 | ¹ SVARC | 14 | L+P $\pi N \rightarrow \pi N$ |
| ● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ● | | | |
| 241 | HUNT | 19 | DPWA Multichannel |
| 166 \pm 30 | ² ANISOVICH | 17A | L+P $\gamma p, \pi^- p \rightarrow K \Lambda$ |
| 280 \pm 50 | SOKHOYAN | 15A | DPWA Multichannel |
| 280 \pm 50 | GUTZ | 14 | DPWA Multichannel |
| 173 | SHKLYAR | 13 | DPWA Multichannel |
| 200 ⁺ ₋ 100 60 | ANISOVICH | 12A | DPWA Multichannel |

¹ Fit to the amplitudes of HOEHLER 79.² Statistical error only. **$N(1900)$ ELASTIC POLE RESIDUE****MODULUS $|r|$**

| VALUE (MeV) | DOCUMENT ID | TECN | COMMENT |
|---|--------------------|------|-------------------------------|
| 2 to 6 (\approx 4) OUR ESTIMATE | | | |
| 4 \pm 2 | SOKHOYAN | 15A | DPWA Multichannel |
| 4 \pm 1 \pm 1 | ¹ SVARC | 14 | L+P $\pi N \rightarrow \pi N$ |
| ● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ● | | | |
| 4 \pm 2 | GUTZ | 14 | DPWA Multichannel |
| 10 | SHKLYAR | 13 | DPWA Multichannel |
| 3 \pm 2 | ANISOVICH | 12A | DPWA Multichannel |

¹ Fit to the amplitudes of HOEHLER 79.

PHASE θ

| <u>VALUE ($^{\circ}$)</u> | <u>DOCUMENT ID</u> | <u>TECN</u> | <u>COMMENT</u> |
|---|--------------------|-------------|-------------------------------|
| –50 to 10 (\approx –20) OUR ESTIMATE | | | |
| –10 \pm 40 | SOKHOYAN | 15A | DPWA Multichannel |
| –29 \pm 15 \pm 2 | ¹ SVARC | 14 | L+P $\pi N \rightarrow \pi N$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | |
| –10 \pm 40 | GUTZ | 14 | DPWA Multichannel |
| –64 | SHKLYAR | 13 | DPWA Multichannel |
| 10 \pm 35 | ANISOVICH | 12A | DPWA Multichannel |
| ¹ Fit to the amplitudes of HOEHLER 79. | | | |

 $N(1900)$ INELASTIC POLE RESIDUE

The “normalized residue” is the residue divided by $\Gamma_{pole}/2$.

Normalized residue in $N\pi \rightarrow N(1900) \rightarrow N\eta$

| <u>MODULUS</u> | <u>PHASE ($^{\circ}$)</u> | <u>DOCUMENT ID</u> | <u>TECN</u> | <u>COMMENT</u> |
|-----------------|--------------------------------------|--------------------|-------------|-------------------|
| 0.05 \pm 0.02 | 70 \pm 60 | ANISOVICH | 12A | DPWA Multichannel |

Normalized residue in $N\pi \rightarrow N(1900) \rightarrow \Lambda K$

| <u>MODULUS</u> | <u>PHASE ($^{\circ}$)</u> | <u>DOCUMENT ID</u> | <u>TECN</u> | <u>COMMENT</u> |
|---|--------------------------------------|--------------------|-------------|-------------------|
| 0.03 \pm 0.02 | 90 \pm 40 | ANISOVICH | 17A | DPWA Multichannel |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | |
| 0.07 \pm 0.03 | 135 \pm 25 | ANISOVICH | 12A | DPWA Multichannel |

Normalized residue in $N\pi \rightarrow N(1900) \rightarrow \Sigma K$

| <u>MODULUS</u> | <u>PHASE ($^{\circ}$)</u> | <u>DOCUMENT ID</u> | <u>TECN</u> | <u>COMMENT</u> |
|-----------------|--------------------------------------|--------------------|-------------|-------------------|
| 0.04 \pm 0.02 | 110 \pm 30 | ANISOVICH | 12A | DPWA Multichannel |

Normalized residue in $N\pi \rightarrow N(1900) \rightarrow N(1535)\pi$

| <u>MODULUS</u> | <u>PHASE ($^{\circ}$)</u> | <u>DOCUMENT ID</u> | <u>TECN</u> | <u>COMMENT</u> |
|-----------------|--------------------------------------|--------------------|-------------|-------------------|
| 0.04 \pm 0.01 | 170 \pm 30 | GUTZ | 14 | DPWA Multichannel |

Normalized residue in $N\pi \rightarrow N(1900) \rightarrow \Delta(1232)\pi, P$ -wave

| <u>MODULUS</u> | <u>PHASE ($^{\circ}$)</u> | <u>DOCUMENT ID</u> | <u>TECN</u> | <u>COMMENT</u> |
|-----------------|--------------------------------------|--------------------|-------------|-------------------|
| 0.07 \pm 0.04 | –65 \pm 30 | SOKHOYAN | 15A | DPWA Multichannel |

Normalized residue in $N\pi \rightarrow N(1900) \rightarrow \Delta(1232)\pi, F$ -wave

| <u>MODULUS</u> | <u>PHASE ($^{\circ}$)</u> | <u>DOCUMENT ID</u> | <u>TECN</u> | <u>COMMENT</u> |
|-----------------|--------------------------------------|--------------------|-------------|-------------------|
| 0.10 \pm 0.05 | 80 \pm 30 | SOKHOYAN | 15A | DPWA Multichannel |

Normalized residue in $N\pi \rightarrow N(1900) \rightarrow N(1520)\pi$

| <u>MODULUS</u> | <u>PHASE ($^{\circ}$)</u> | <u>DOCUMENT ID</u> | <u>TECN</u> | <u>COMMENT</u> |
|-----------------|--------------------------------------|--------------------|-------------|-------------------|
| 0.07 \pm 0.04 | –105 \pm 35 | SOKHOYAN | 15A | DPWA Multichannel |

Normalized residue in $N\pi \rightarrow N(1900) \rightarrow N\sigma$

| <u>MODULUS</u> | <u>PHASE ($^{\circ}$)</u> | <u>DOCUMENT ID</u> | <u>TECN</u> | <u>COMMENT</u> |
|-----------------|--------------------------------------|--------------------|-------------|-------------------|
| 0.03 \pm 0.02 | –110 \pm 35 | SOKHOYAN | 15A | DPWA Multichannel |

$N(1900)$ BREIT-WIGNER MASS

| <u>VALUE (MeV)</u> | <u>DOCUMENT ID</u> | <u>TECN</u> | <u>COMMENT</u> |
|---|-----------------------|-------------|-------------------|
| 1890 to 1950 (\approx 1920) OUR ESTIMATE | | | |
| 1911 \pm 6 | ¹ HUNT | 19 | DPWA Multichannel |
| 1910 \pm 30 | SOKHOYAN | 15A | DPWA Multichannel |
| 1998 \pm 3 | ¹ SHKLYAR | 13 | DPWA Multichannel |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | |
| 1910 \pm 30 | GUTZ | 14 | DPWA Multichannel |
| 1905 \pm 30 | ANISOVICH | 12A | DPWA Multichannel |
| 1900 \pm 8 | ¹ SHRESTHA | 12A | DPWA Multichannel |
| 1951 \pm 53 | PENNER | 02C | DPWA Multichannel |
| ¹ Statistical error only. | | | |

 $N(1900)$ BREIT-WIGNER WIDTH

| <u>VALUE (MeV)</u> | <u>DOCUMENT ID</u> | <u>TECN</u> | <u>COMMENT</u> |
|---|-----------------------|-------------|-------------------|
| 100 to 320 (\approx 200) OUR ESTIMATE | | | |
| 292 \pm 16 | ¹ HUNT | 19 | DPWA Multichannel |
| 270 \pm 50 | SOKHOYAN | 15A | DPWA Multichannel |
| 359 \pm 10 | ¹ SHKLYAR | 13 | DPWA Multichannel |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | |
| 270 \pm 50 | GUTZ | 14 | DPWA Multichannel |
| 250 $^{+120}_{-50}$ | ANISOVICH | 12A | DPWA Multichannel |
| 101 \pm 15 | ¹ SHRESTHA | 12A | DPWA Multichannel |
| 622 \pm 42 | PENNER | 02C | DPWA Multichannel |
| ¹ Statistical error only. | | | |

 $N(1900)$ DECAY MODES

| Mode | Fraction (Γ_i/Γ) |
|---|--------------------------------|
| Γ_1 $N\pi$ | 1–20 % |
| Γ_2 $N\eta$ | 2–14 % |
| Γ_3 $N\eta'$ | 4–8 % |
| Γ_4 $N\omega$ | 7–13 % |
| Γ_5 ΛK | 2–20 % |
| Γ_6 ΣK | 3–7 % |
| Γ_7 $N\pi\pi$ | >56 % |
| Γ_8 $\Delta(1232)\pi$ | 30–70 % |
| Γ_9 $\Delta(1232)\pi$, P -wave | 9–25 % |
| Γ_{10} $\Delta(1232)\pi$, F -wave | 21–45 % |
| Γ_{11} $N\rho$, $S=1/2$ | 25–40 % |

| | | |
|---------------|--------------------------|---------------|
| Γ_{12} | $N\sigma$ | 1–7 % |
| Γ_{13} | $N(1520)\pi$ | 7–23 % |
| Γ_{14} | $N(1535)\pi$ | 4–10 % |
| Γ_{15} | $\Lambda K^*(892)$ | < 0.2 % |
| Γ_{16} | $p\gamma$ | 0.001–0.025 % |
| Γ_{17} | $p\gamma$, helicity=1/2 | 0.001–0.021 % |
| Γ_{18} | $p\gamma$, helicity=3/2 | <0.003 % |
| Γ_{19} | $n\gamma$ | <0.040 % |
| Γ_{20} | $n\gamma$, helicity=1/2 | <0.007 % |
| Γ_{21} | $n\gamma$, helicity=3/2 | <0.033 % |

$N(1900)$ BRANCHING RATIOS

$\Gamma(N\pi)/\Gamma_{\text{total}}$ Γ_1/Γ

| <u>VALUE (%)</u> | <u>DOCUMENT ID</u> | <u>TECN</u> | <u>COMMENT</u> |
|---|-----------------------|-------------|-------------------|
| 1–20 % OUR ESTIMATE | | | |
| 1.9±0.1 | ¹ HUNT | 19 | DPWA Multichannel |
| 3 ±2 | SOKHOYAN | 15A | DPWA Multichannel |
| 25 ±1 | ¹ SHKLYAR | 13 | DPWA Multichannel |
| ● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ● | | | |
| 3 ±2 | GUTZ | 14 | DPWA Multichannel |
| 3 ±2 | ANISOVICH | 12A | DPWA Multichannel |
| 7 ±4 | ¹ SHRESTHA | 12A | DPWA Multichannel |
| 16 ±2 | PENNER | 02C | DPWA Multichannel |
| ¹ Statistical error only. | | | |

$\Gamma(N\eta)/\Gamma_{\text{total}}$ Γ_2/Γ

| <u>VALUE (%)</u> | <u>DOCUMENT ID</u> | <u>TECN</u> | <u>COMMENT</u> |
|---|-----------------------|-------------|-------------------|
| 2 ±2 | MUELLER | 20 | DPWA Multichannel |
| 1.3±0.5 | ¹ HUNT | 19 | DPWA Multichannel |
| 2 ±2 | ¹ SHKLYAR | 13 | DPWA Multichannel |
| 10 ±4 | ANISOVICH | 12A | DPWA Multichannel |
| ● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ● | | | |
| < 1 | ¹ SHRESTHA | 12A | DPWA Multichannel |
| 14 ±5 | PENNER | 02C | DPWA Multichannel |
| ¹ Statistical error only. | | | |

$\Gamma(N\eta')/\Gamma_{\text{total}}$ Γ_3/Γ

| <u>VALUE (%)</u> | <u>DOCUMENT ID</u> | <u>TECN</u> | <u>COMMENT</u> |
|---------------------------|--------------------|-------------|-------------------|
| 4–8 % OUR ESTIMATE | | | |
| 6±2 | ANISOVICH | 17C | DPWA Multichannel |

$\Gamma(N\omega)/\Gamma_{\text{total}}$ Γ_4/Γ

| <u>VALUE (%)</u> | <u>DOCUMENT ID</u> | <u>TECN</u> | <u>COMMENT</u> |
|------------------|----------------------|-------------|-------------------|
| 15±8 | DENISENKO | 16 | DPWA Multichannel |
| 10±3 | ¹ SHKLYAR | 13 | DPWA Multichannel |

• • • We do not use the following data for averages, fits, limits, etc. • • •

39±9 PENNER 02C DPWA Multichannel

¹Statistical error only.

$\Gamma(\Lambda K)/\Gamma_{\text{total}}$ Γ_5/Γ

| <u>VALUE (%)</u> | <u>DOCUMENT ID</u> | <u>TECN</u> | <u>COMMENT</u> |
|------------------|-------------------------|-------------|----------------|
| 13.7±0.3 | ¹ HUNT 19 | DPWA | Multichannel |
| 16 ±5 | ANISOVICH 12A | DPWA | Multichannel |
| 2.4±0.3 | ¹ SHKLYAR 05 | DPWA | Multichannel |

• • • We do not use the following data for averages, fits, limits, etc. • • •

14 ±5 ¹SHRESTHA 12A DPWA Multichannel
 5 to 15 NIKONOV 08 DPWA Multichannel
 0.1±0.1 PENNER 02C DPWA Multichannel

¹Statistical error only.

$\Gamma(\Sigma K)/\Gamma_{\text{total}}$ Γ_6/Γ

| <u>VALUE (%)</u> | <u>DOCUMENT ID</u> | <u>TECN</u> | <u>COMMENT</u> |
|------------------|--------------------|-------------|----------------|
| 5±2 | ANISOVICH 12A | DPWA | Multichannel |

• • • We do not use the following data for averages, fits, limits, etc. • • •

1±1 PENNER 02C DPWA Multichannel

$\Gamma(\Delta(1232)\pi, P\text{-wave})/\Gamma_{\text{total}}$ Γ_9/Γ

| <u>VALUE (%)</u> | <u>DOCUMENT ID</u> | <u>TECN</u> | <u>COMMENT</u> |
|------------------|--------------------|-------------|----------------|
| 17±8 | SOKHOYAN 15A | DPWA | Multichannel |

$\Gamma(\Delta(1232)\pi, F\text{-wave})/\Gamma_{\text{total}}$ Γ_{10}/Γ

| <u>VALUE (%)</u> | <u>DOCUMENT ID</u> | <u>TECN</u> | <u>COMMENT</u> |
|------------------|--------------------|-------------|----------------|
| 33±12 | SOKHOYAN 15A | DPWA | Multichannel |

$\Gamma(N\rho, S=1/2)/\Gamma_{\text{total}}$ Γ_{11}/Γ

| <u>VALUE (%)</u> | <u>DOCUMENT ID</u> | <u>TECN</u> | <u>COMMENT</u> |
|-------------------------------------|----------------------|-------------|----------------|
| 25–40 % OUR ESTIMATE 32±7 | ¹ HUNT 19 | DPWA | Multichannel |

¹Statistical error only.

$\Gamma(N\sigma)/\Gamma_{\text{total}}$ Γ_{12}/Γ

| <u>VALUE (%)</u> | <u>DOCUMENT ID</u> | <u>TECN</u> | <u>COMMENT</u> |
|------------------|--------------------|-------------|----------------|
| 4±3 | SOKHOYAN 15A | DPWA | Multichannel |

$\Gamma(N(1520)\pi)/\Gamma_{\text{total}}$ Γ_{13}/Γ

| <u>VALUE (%)</u> | <u>DOCUMENT ID</u> | <u>TECN</u> | <u>COMMENT</u> |
|------------------|--------------------|-------------|----------------|
| 15±8 | SOKHOYAN 15A | DPWA | Multichannel |

$\Gamma(N(1535)\pi)/\Gamma_{\text{total}}$ Γ_{14}/Γ

| <u>VALUE (%)</u> | <u>DOCUMENT ID</u> | <u>TECN</u> | <u>COMMENT</u> |
|------------------|--------------------|-------------|----------------|
| 7±3 | GUTZ 14 | DPWA | Multichannel |

| $\Gamma(\Lambda K^*(892))/\Gamma_{\text{total}}$ | Γ_{15}/Γ | | |
|--|----------------------|------|-------------------|
| VALUE (%) | DOCUMENT ID | TECN | COMMENT |
| < 0.2 % OUR ESTIMATE | | | |
| <0.2 | ANISOVICH | 17B | DPWA Multichannel |

$N(1900)$ PHOTON DECAY AMPLITUDES AT THE POLE

$N(1900) \rightarrow p\gamma$, helicity-1/2 amplitude $A_{1/2}$

| MODULUS ($\text{GeV}^{-1/2}$) | PHASE ($^\circ$) | DOCUMENT ID | TECN | COMMENT |
|---------------------------------|--------------------|-------------|------|-------------------|
| 0.026 ± 0.014 | 60 ± 35 | SOKHOYAN | 15A | DPWA Multichannel |

$N(1900) \rightarrow p\gamma$, helicity-3/2 amplitude $A_{3/2}$

| MODULUS ($\text{GeV}^{-1/2}$) | PHASE ($^\circ$) | DOCUMENT ID | TECN | COMMENT |
|---------------------------------|--------------------|-------------|------|-------------------|
| -0.070 ± 0.030 | 70 ± 50 | SOKHOYAN | 15A | DPWA Multichannel |

$N(1900)$ BREIT-WIGNER PHOTON DECAY AMPLITUDES

$N(1900) \rightarrow p\gamma$, helicity-1/2 amplitude $A_{1/2}$

| VALUE ($\text{GeV}^{-1/2}$) | DOCUMENT ID | TECN | COMMENT |
|---|-----------------------|------|-------------------|
| 0.040 ± 0.004 | ¹ HUNT | 19 | DPWA Multichannel |
| 0.024 ± 0.014 | SOKHOYAN | 15A | DPWA Multichannel |
| -0.008 ± 0.001 | ¹ SHKLYAR | 13 | DPWA Multichannel |
| ● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ● | | | |
| 0.024 ± 0.014 | GUTZ | 14 | DPWA Multichannel |
| 0.026 ± 0.015 | ANISOVICH | 12A | DPWA Multichannel |
| 0.041 ± 0.008 | ¹ SHRESTHA | 12A | DPWA Multichannel |
| -0.017 | PENNER | 02D | DPWA Multichannel |

¹Statistical error only.

$N(1900) \rightarrow p\gamma$, helicity-3/2 amplitude $A_{3/2}$

| VALUE ($\text{GeV}^{-1/2}$) | DOCUMENT ID | TECN | COMMENT |
|---|-----------------------|------|-------------------|
| -0.094 ± 0.007 | ¹ HUNT | 19 | DPWA Multichannel |
| -0.067 ± 0.030 | SOKHOYAN | 15A | DPWA Multichannel |
| < 0.001 | SHKLYAR | 13 | DPWA Multichannel |
| ● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ● | | | |
| -0.067 ± 0.030 | GUTZ | 14 | DPWA Multichannel |
| -0.065 ± 0.030 | ANISOVICH | 12A | DPWA Multichannel |
| -0.004 ± 0.006 | ¹ SHRESTHA | 12A | DPWA Multichannel |
| 0.031 | PENNER | 02D | DPWA Multichannel |

¹Statistical error only.

$N(1900) \rightarrow n\gamma$, helicity-1/2 amplitude $A_{1/2}$

| VALUE ($\text{GeV}^{-1/2}$) | DOCUMENT ID | TECN | COMMENT |
|---|-----------------------|------|-------------------|
| 0.007 ± 0.014 | ¹ HUNT | 19 | DPWA Multichannel |
| 0.000 ± 0.030 | ANISOVICH | 13B | DPWA Multichannel |
| ● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ● | | | |
| -0.010 ± 0.004 | ¹ SHRESTHA | 12A | DPWA Multichannel |
| -0.016 | PENNER | 02D | DPWA Multichannel |

¹Statistical error only.

$N(1900) \rightarrow n\gamma$, helicity-3/2 amplitude $A_{3/2}$

| <u>VALUE (GeV^{-1/2})</u> | <u>DOCUMENT ID</u> | <u>TECN</u> | <u>COMMENT</u> |
|---|-----------------------|-------------|-------------------|
| 0.007 ± 0.011 | ¹ HUNT | 19 | DPWA Multichannel |
| -0.060 ± 0.045 | ANISOVICH | 13B | DPWA Multichannel |
| ● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ● | | | |
| -0.011 ± 0.007 | ¹ SHRESTHA | 12A | DPWA Multichannel |
| -0.002 | PENNER | 02D | DPWA Multichannel |
| ¹ Statistical error only. | | | |

 $N(1900)$ REFERENCES

| | | | | |
|-----------|-----|----------------|---------------------------------|-------------------------|
| MUELLER | 20 | PL B803 135323 | J. Mueller <i>et al.</i> | (CBELSA/TAPS Collab.) |
| HUNT | 19 | PR C99 055205 | B.C. Hunt, D.M. Manley | |
| ANISOVICH | 17A | PRL 119 062004 | A.V. Anisovich <i>et al.</i> | |
| ANISOVICH | 17B | PL B771 142 | A.V. Anisovich <i>et al.</i> | |
| ANISOVICH | 17C | PL B772 247 | A.V. Anisovich <i>et al.</i> | |
| DENISENKO | 16 | PL B755 97 | I. Denisenko <i>et al.</i> | |
| SOKHOYAN | 15A | EPJ A51 95 | V. Sokhoyan <i>et al.</i> | (CBELSA/TAPS Collab.) |
| GUTZ | 14 | EPJ A50 74 | E. Gutz <i>et al.</i> | (CBELSA/TAPS Collab.) |
| SVARC | 14 | PR C89 045205 | A. Svarc <i>et al.</i> | (RBI Zagreb, UNI Tuzla) |
| ANISOVICH | 13B | EPJ A49 67 | A.V. Anisovich <i>et al.</i> | |
| SHKLYAR | 13 | PR C87 015201 | V. Shklyar, H. Lenske, U. Mosel | (GIES) |
| ANISOVICH | 12A | EPJ A48 15 | A.V. Anisovich <i>et al.</i> | (BONN, PNPI) |
| SHRESTHA | 12A | PR C86 055203 | M. Shrestha, D.M. Manley | (KSU) |
| NIKONOV | 08 | PL B662 245 | V.A. Nikonov <i>et al.</i> | (Bonn, Gatchina) |
| SHKLYAR | 05 | PR C72 015210 | V. Shklyar, H. Lenske, U. Mosel | (GIES) |
| PENNER | 02C | PR C66 055211 | G. Penner, U. Mosel | (GIES) |
| PENNER | 02D | PR C66 055212 | G. Penner, U. Mosel | (GIES) |
| HOEHLER | 79 | PDAT 12-1 | G. Hohler <i>et al.</i> | (KARLT) |